Lucent Technologies
Bell Labs Innovations

4ESS™ Switch
Product Release Document

4E23 Release 3 Generic

234-090-233
Issue 1
June 1998

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Developed by Lucent Technologies Switching and Access Information Development.

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Tables

About This Document

1. Purpose

1.01 The purpose of the Product Release Document (PRD) is to provide customers with information pertaining to the new features that are introduced in the *4ESS*™ switch. A PRD is written to cover the features introduced in quarterly generic releases and full generic releases. This particular PRD provides information pertaining to the new features included in the 4E23 Release 3 Generic.

2. Scope

2.01 The Product Release Document provides customers with information not covered in other *4ESS* switch documentation. It is not a replacement for other documentation such as Standard Lucent Technologies Practices, Task Oriented Practices (TOP), Maintenance Reference Handbooks, etc., that support the *4ESS* switch. The information in this document is intended only for the introduction of the new 4E23 Release 3 features, not the long-term maintenance. Since other documentation is used for the operation and maintenance of features after their introduction into the *4ESS* switch, this PRD will not be reissued.

3. Intended Audience

3.01 This document is intended for people involved in testing, provisioning, maintenance, administration, and technical support of the *4ESS* switch. Feature managers, Integrated Test Network (ITN) personnel, field support, Network Control Center (NCC), Product Engineering Control Center (PECC), and National Electronic Switching Assistance Center (NESAC) personnel are examples of some of the people who will use the PRD.

4. How to Use This Document

4.01 The PRD for 4E23 Release 3 Generic includes 5 new features for non-Lucent Technologies *4ESS* switches.

4.02 The following is a list of the chapters contained in this document with a brief description of the feature covered in that chapter (chapter titles are also the feature names):

Chapter 1: *2000 A.D. Transition Feature (476)*

This feature provides the requirements for network elements to function properly and reliably through the year 2000 and beyond.

Chapter 2: *Analyze Ported Number Gap for Advanced Intelligent Network Called Number Triggers Feature (515)*

This feature allows the *4EE* switch to check the contents of a ported number Generic Address Parameter. The switch searches for Advanced Intelligent Network Called Number Triggers of Local Number Portability calls that are ported into the Local Exchange Carrier Network.

Chapter 3: *Advanced Intelligent Network 6-Digit Called Number Trigger Expansion Feature (516)*

Because of the potential for exhaust of Advanced Intelligent Network 6-Digit Called Number Triggers (CNTs) for offices in metropolitan areas, this feature increases to 50,000 the number of 6-Digit CNTs that can be provisioned on the *4ESS* switch. The new triggers can be designated for Number Portability, Advanced Intelligent Network, or both.

Chapter 4: *Local Exchange Carrier Local Number Portability OA&M Enhancements Feature (517)*

This feature describes the measurements that allow network managers to identify and monitor Number Portability effects on local networks. It also lists the changes governing the Connecting Network Access Automatic Message Accounting records.

Chapter 5: *LNP/AIN Domain Option Feature (534)*

This feature allows the *4ESS* switch to perform special domain determination logic when preparing to translate the called number received from the AIN or SCP. If this feature is active, the *4ESS* switch translates the called number returned by the SCP in the same domain which the original called number was translated. If the called number received in the incoming signaling was not translated, then the *4ESS* switch defaults to the appropriate data or voice domain (82, N64C, or POTS).

Chapter 6: *Release Summary—4E23 Release 3 Generic*

This chapter summarizes several aspects of the features in this document. This chapter identifies Growth and Retrofit documents (if any) resulting from features in the current release; new, changed, or deleted input and output messages; Operation Support Systems impacts of the release; and new or changed alarms. The final section tells how each feature is turned on and off.

4.03 A list of abbreviations and acronyms, and their definitions, is included at the end of this document.

5. Product Safety Labels

5.01 There are three types of safety labels used in Lucent Technologies documentation: DANGER, WARNING, and CAUTION. This document contains admonishments in the form of CAUTIONS. A CAUTION admonishment indicates the presence of a hazard that will or can cause minor personal injury or property damage if the hazard is not avoided.

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2000 A.D. Transition Feature (476)

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2000 A.D. Transition Feature (476)

1

1. Feature Description

Background

1.01 Most network elements represent the year with a 2-digit field(that is, mm/dd/yy, where mm=month, dd=day, yy=year). This may cause major problems when the year 2000 and beyond are entered or automatically calculated. The year "00" may not be recognized, or may be interpreted as 1900. Date manipulations, comparisons and sequencing for the year 2000 and beyond may be calculated incorrectly (for example, 01/01/00 may be interpreted as coming before 01/01/99).

1.02 This feature provides the requirements for network elements to function properly and reliably through the year 2000 and beyond. It is necessary for these network elements to be Y2K (year 2000) compatible, and to obtain Y2K Certification. Complete Y2K compliance will be obtained only after all network elements that interface together are certified.

Year 2000 Software Compliance Definition

For *4ESS*™ Year 2000 compliance, the following requirements must be met:

- A 2-digit year date representation will not result in any software errors in arithmetic, comparison, sorting and input/output to databases or files when manipulating year date data.
- All leap year software algorithms will correctly recognize years divisible by 400 as leap years.
- No software compliant code will have hardcoded first two digit year information of "19" into software routines or will use the 2-digit year dates "98", "99", or "00" as special reserved values or magic numbers (for example, illegal values used to exit code, or to indicate a demonstration account number).
- System date values will not roll over and cause software failures due to a storage or data register filling up and overflowing.

General Requirements

1.03 When the century is not explicitly provided, the century value must be correctly inferred with 100% accuracy from the value of the date provided.

1.04 The following is the method for interpreting of 2-digit dates:

- 00-69 will be interpreted as 2000-2069
- 70-99 will be interpreted as 1970-1999.

2. Call Flow (Not Affected)

3. Provisioning

Recent Change Forms Affected

A. RC Form 607

3.01 This feature changes the population rules for the following three fields:

- **STRTY** entries: 00-99.
- **STOPY** entries: 00-99.
- **CFPYEAR** entries: 00-99.

NOTE:
For 4E23 Release 3 Generic and later, values 00-69 signify years 2000-2069, respectively; and values 70-99 signify years 1970-1999, respectively.

B. RC Form 610

3.02 This feature changes the population rules for the following three fields:

- **STRTY** entries: 00-99.
- **STOPY** entries: 00-99.
- **CFPYEAR** entries: 00-99.

NOTE:
For 4E23 Release 3 Generic and later, value 00-69 signify years 2000-2069, respectively; and values 70-99 signify years 1970-1999, respectively.

C. RC Form 611

3.03 This feature changes the population rules for the following three fields:

- **STRTY** entries: 00-99.
- **STOPY** entries: 00-99.
- **CFPYEAR** entries: 00-99.

NOTE:
For 4E23 Release 3 Generic and later, value 00-69 signify years 2000-2069, respectively; and values 70-99 signify years 1970-1999, respectively.

D. RC Form 615

3.04 This feature changes the population rules for the following three fields:

- **STRTY** entries: 00-99.
- **STOPY** entries: 00-99.
- **CFPYEAR** entries: 00-99.

NOTE:
For 4E23 Release 3 Generic and later, values 00-69 signify years 2000-2069, respectively; and values 70-99 signify years 1970-1999, respectively.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Deployment Requirements

7.01 It is not necessary for all *4ESS* switches in the network to be running the 4E23 Release 3 Generic for this feature to be fully operational.

Feature Activation

7.02 This feature is turned on automatically with software deployment.

8. Input/Output Manual Pages

8.01 The Input message **SET:CLK** has a new requirement regarding the year digits for the date to be set (q,r); q=tens digit of the year and r=units digit of the year. If the year is less than 70, it refers to years in the 21st century.

Analyze Ported Number Gap for Advanced Intelligent Network Called Number Triggers Feature (515)

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Analyze Ported Number Gap for Advanced Intelligent Network Called Number Triggers Feature (515)

2

1. Feature Description

1.01 This feature allows the *4ESS*™ switch to check the contents of a ported number Generic Address Parameter (GAP). The switch is searching for Advanced Intelligent Network (AIN) Called Number Triggers (CNTs) of Local Number Portability (LNP) calls that are ported into the Local Exchange Carrier (LEC) network [that is, received at a network interconnection point—either a terminating access tandem for calls received from Interexchange Carriers (IXCs) or a terminating local tandem for calls received from another local carrier].

1.02 The LNP was introduced in the 4E22 Release 2 Generic (Feature 450, 234-090-222) and allowed the *4ESS* switch to act as an intermediate exchange in local networks. Number portability provides the network infrastructure to give subscribers the capability to physically move from one switch to another while retaining their original Directory Number (DN). This capability is referred to as porting.

1.03 Number portability introduced a new AIN LNP trigger and the concept of a Location Routing Number (LRN). The LRN is a 10-digit number (NPA-NXX-XXXX) that uniquely identifies an end office or rate center within the end office, and is used as a virtual address for the switch serving ported subscribers. When a DN is defined as portable, checks are made to determine if a query should be launched to the Service Control Point (SCP). When a query is launched, service logic in the SCP determines if the DN has been ported and returns either an LRN (for a ported number) or the original DN (for a non-ported number). Calls to ported numbers are routed using the LRN. Calls to a non-ported number are routed using the DN.

2. Call Flow (Not Affected)

3. Provisioning

Data Structures Affected

A. OD4NAOPT

3.01 A new 1-bit item, **OD4NAOPTAT_AGAP**, is being added to this structure and indicates if the office has purchased Feature 515. Table 2-A describes the bit indicators.

Table 2-A. OD4ANOPT Assigned States

Symbol	Value	Description
4ODOPT_NO	1	This feature has ***not*** been purchased
4ODOPT_YES	0	This feature has been purchased

3.02 The purchased indicators are populated using Office Data Assembler/Office Data Management System (ODA/ODMS) procedures and are ***not*** recent changeable.

B. OD4OFCCOPY

3.03 The non-proprietary feature on/off indicator, **OD4F19**, is assigned as an office parameter indicating if Feature 515 is enabled. Valid entries are as follows:

- 4ODFB_OFF = 0 (feature off, default)
- 4ODFB_ON = 1 (feature on).

The on/off flag for this feature is populated using Recent Change Form 809.

ODA Forms Affected

A. Form T2

3.04 The new field, **AT_AGAP**, on the ODA T2 form indicates if the office has purchased this feature. This field resides in the non-AT&T Option feature bits in OD4NAOPT.

B. Population Rules

3.05 Valid entries for this feature are as follows:

- **Y** = 4ODOPT_YES (0 or a reset state)
- **N** = 4ODOPT_NO (1 or a set state).

3.06 This purchase indicator is ***never*** set to **Y** unless both Feature 375 and Feature 450 have been purchased by the customer.

3.07 The ODA purchase indicator is provisioned on a non-generic retrofit as follows:

1. The line engineer fills out a T2 form when the customer orders the feature and sends the form to Network Group-Office Data Assembler (NG-ODA).
2. NG-ODA runs the update secured bit process and provides the information to Lucent Field Support for an overwrite.
3. Lucent Field Support works with the customer to apply the overwrite.

Recent Change Form 809

3.08 This form is used to enable and disable feature bits. The layout is not changing. The entry **F19** is being assigned for Feature 515 and indicates if this feature is active in the switch. The setting of **ON** indicates that the feature is active. The default is **OFF**.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Feature Dependencies

7.01 Customers must have purchased the following features before Feature 515 can be activated:

- Feature 375, *Advanced Intelligent Network Dialed Number Triggers* (4E18 Release 2 Generic), 234-090-182
- Feature 450, *Number Portability—Local Exchange Carrier* (4E22 Release 2 Generic), 234-090-222.

Deployment Requirements

7.02 It is not necessary for the 4E23 Release 3 Generic to be deployed in all *4ESS* switches in the network for this feature to be fully operational.

Feature Activation

7.03 Recent Change form 809 is used to enable and disable feature bits. The entry **F19** is assigned for Feature 515 and indicates if this feature is active in the switch. The setting of **ON** indicates that the feature is active. The default is **OFF**.

7.04 The purchase indicator is ***never*** set to **Y** unless both Feature 375 and Feature 450 have been purchased by the customer. The ODA purchase indicator is provisioned on a non-generic retrofit as follows:

1. The line engineer fills out a T2 form when the customer orders the feature and sends the form to Network Group-Office Data Assembler (NG-ODA).
2. NG-ODA runs the update secured bit process and provides the information to Lucent Field Support for an overwrite.
3. Lucent Field Support works with the customer to apply the overwrite.

8. Input/Output Manual Pages (Not Affected)

Advanced Intelligent Network (AIN) 6-Digit Called Number Trigger (CNT) Expansion Feature (516)

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Advanced Intelligent Network (AIN) 6-Digit Called Number Trigger (CNT) Expansion Feature (516)

3

1. Feature Description

Background

1.01 The addition of Local Number Portability (LNP) Called Number Triggers (CNTs), which are expected to be provisioned on a 6-digit basis for both voice (POTS domains) and data calls (non-wideband data domains), coupled with the increasing numbers of Numbering Plan Areas (NPAs) to be supported by a single switch due to NPA splits, has led to the potential exhaust of Advanced Intelligent Network (AIN) 6-digit CNTs for *4ESS*™ switch offices in metropolitan areas.

Description

1.02 This feature will increase to at least 50,000 the number of AIN 6-digit CNTs which can be provisioned on the *4ESS* switch. The new 6-digit triggers can be designated as either LNP or AIN or both, and they will be associated with a set of translations domains for which the triggers apply.

1.03 As a result, each new 6-digit trigger will be encountered in all the specified domains, and each will receive either AIN or LNP treatment according to the designation associated with the trigger (i.e., the treatment is the same in all domains). Traditional AIN CNT detection via digit translation will also continue to be supported on a 3- through 10-digit basis, with the existing limit of 8191 CNTs.

2. Call Flow (Not Affected)

3. Provisioning

Data Structures Affected

A. OD4NAOPT

3.01 A new 1-bit item, **OD4NAOPTAT_6DTEX**, is being added to this structure and indicates if the office has purchased Feature 516. Table 3-A describes the bit indicators.

Table 3-A. OD4ANOPT Assigned States

Symbol	Value	Description
4ODOPT_NO	1	This feature has ***not*** been purchased
4ODOPT_YES	0	This feature has been purchased

3.02 The purchase indicators are populated using Office Data Assembler/Office Data Management System (ODA/ODMS) procedures and are ***not*** recent changeable.

B. OD4OFCCOPY

3.03 The non-proprietary feature on/off indicator, **OD4F20**, is assigned as an office parameter indicating whether or not the 10-Digit AIN Trigger expansion **DOMAIN CHECK** capability for Feature 516 is enabled. Valid entries are as follows:

- 4ODFB_OFF = 0 (capability off, default)
- 4ODFB_ON = 1 (capability on).

The on/off indicator for this feature is populated using Recent Change Form 809.

C. HT4DOM_TYP

3.04 The following domain type 1-bit indicators have been added:

- XL4DMTY_SDAC is the 6-Digit AIN/LNP CNT yes/no indicator that determines whether a domain is allowed for a 6-Digit CNT for either the AIN or the LNP features.

- XL4DMTY_TDAC is the 10-Digit AIN CNT yes/no indicator that determines whether a domain is allowed for an AIN 10-Digit CNT.

3.05 The assigned states are the following:

- 4ODDOMNO = 0 (default, domain type indicator is "NO"–not allowed)
- 4ODDOMYES = 1 (domain type indicator is "YES"–allowed)

The YES/NO domain type indicators are populated using Recent Change Form 344.

D. OD4AIN_ITEMS

3.06 Within the OD4AIN_ITEMS structure two new 6-digit office wide Type-Of-Service (TOS) Index parameters will be defined. One parameter will be defined for AIN 6-digit expansion CNTs "OD4AINO_A6TOSI" and the other for LNP 6-digit expansion CNTs "OD4AINO_L6TOSI". These parameters will be fully dependent and used in the same manner as the Call Type TOS Index "XL4CTTOS" parameter (defined in TRANTRT). The current legal TOS index values are 0 through 31. Having a zero legal value means that an associated 6-digit TOS populated indicator must be defined for both the 6-digit AIN & LNP TOS indexes: "OD4AINO_A6TOSIP" and "OD4AINO_L6TOSIP". These indicators will be set via RC whenever the corresponding Office-wide 6-digit TOS Index is populated.

3.07 The structure "OD4AIN_ITEMS" is populated via Recent Change Form 810.

E. HT46DIGTRIG

3.08 This new 128-word head table structure contains information for the translation of the 6 digits, NPA-NXX, to determine the AIN/LNP CNT.

ODA Forms Affected

A. Form T2

3.09 The new field, **AT_6DTEX**, on the ODA T2 form indicates if the office has purchased this feature. This field resides in the non-AT&T Option feature bits in OD4NAOPT.

B. Population Rules

3.10 Valid entries for this feature are as follows:

- **Y** = 4ODOPT_YES (0 or a reset state)
- **N** = 4ODOPT_NO (1 or a set state).

3.11 This purchase indicator is ***never*** set to **Y** unless Feature 375 has been purchased by the customer.

3.12 The ODA purchase indicator is provisioned on a non-generic retrofit as follows:

1. The line engineer fills out a T2 form when the customer orders the feature and sends the form to Network Group-Office Data Assembler (NG-ODA).
2. The NG-ODA runs the update secured bit process and provides the information to Field Support for an overwrite.
3. Field Support works with the customer to apply the overwrite.

Recent Change Forms Affected

A. Recent Change Form 809

3.13 This form is used to enable and disable feature bits. The layout has not changed. The entry **F20**, assigned for Feature 516, indicates whether or not the 10-digit AIN Trigger Expansion capability is active in the switch. A setting of **ON** indicates that the capability is active. The default is **OFF**.

B. Recent Change Form 810

3.14 This form, used to change miscellaneous feature information, is used to populate the new 6-Digit AIN/LNP Office-wide Type-Of-Service (TOS) Index parameters. The layout of this form has not changed, but two new values are added to the existing field **FEATURE INFO** for this feature—**A6TOS** and **L6TOS**. Also, the existing **FEATURE INFO** item **ATOS** must be modified to allow a blank **DATA** entry.

C. Recent Change Form 344

3.15 This form is used to enable and disable various domain type YES/NO indicators. The layout of this form has not changed, but it must support the two new domain type entries SDAC and TDAC.

D. Recent Change Form 667

3.16 A new RC Form 667 has been created to populate the new 6-Digit NPA-NXX AIN/LNP CNT assignment translator structure. This RC form receives an NPA-NXX (6 digits) and an associated AIN/LNP CNT assignment per entry. The 6 digits will be ranged checked where: the "N" digits of both the NPA & NXX can only be a digit value 2 through 9, and the remainder of the digits (P,A,X, & X) may have digit values 0 through 9. Also, a uniqueness check is performed to prevent the same NPA-NXX digits from being entered multiple times on the same form. After these defensive checks are successfully performed, the 6 digits are converted into a telco BCD format and then used to index the translator structure HT46DIGTRIG. The CNT (Called Number Trigger)

assignment entry which was entered must be validated.

3.17 The valid CNT assignment entries and population rules are as follows:

NONE or blank—Assign the 6-digit NPA-NXX as a non-AIN/LNP CNT trigger [set XL4TRIG_ASN_D0(-9) to 4XLTRIG_NONE (=0)]. Please note that this is also the translator default.

AIN—Assign the 6-digit NPA-NXX as an AIN CNT trigger [set XL4TRIG_ASN_D0(-9) to 4XLTRIG_AIN (=1)] only if the office-wide AIN 6-digit TOS index is provisioned [OD4AINO_A6TOSIP must be set (=1)].

LNP—Assign the 6-digit NPA-NXX as an LNP CNT trigger [set XL4TRIG_ASN_D0(-9) to 4XLTRIG_LNP (=2)] only if the office-wide LNP 6-digit TOS index is provisioned [OD4AINO_L6TOSIP must be set (=1)].

BOTH—Assign the 6-digit NPA-NXX as both an AIN and an LNP CNT trigger [set XL4TRIG_ASN_D0(-9) to 4XLTRIG_BOTH (=3)] only if both the office-wide AIN & LNP 6-digit TOS indexes are provisioned [OD4AINO_A6TOSIP and OD4AINO_L6TOSIP must both be set (=1)].

NOTE:
This form must NOT be allowed to provision the "HT46DIGTRIG" structure unless this feature has been purchased. Checking the new office-wide 6-digit AIN/LNP TOS indexes ensures that the appropriate features have been purchased.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Feature Dependencies

7.01 Before Feature 516 can be activated, customers must have purchased Feature 375, Advanced Intelligent Network Dialed Number Triggers (4E18 Release 2 Generic). That feature is documented in the *4ESS Switch Product Release Document,*

4E18 Release 2 Generic, 234-090-182; and in the *4ESS Switch Advanced Intelligent Network (AIN) User's Guide*, 234-090-019, Issue 2.

7.02 Feature 516 may be provisioned to designate triggers for Feature 450, Number Portability (LNP), 234-090-222.

7.03 Feature 516's triggers apply to the following domains, if purchased:

- AIN DATA Calls, Feature 419, 234-090-214
- AIN Global Default Routing, Feature 411, 234-090-201
- Access Tandem Routing Enhancements, Feature 488, 234-090-224.

Deployment Requirements

7.04 It is not necessary for all *4ESS* switches in the network to be running the 4E23 Release 3 Generic for this feature to be fully operational.

Feature Activation

7.05 Once the purchase indicator is set to **Y**, the AIN 6-digit CNTs are active in the purchased domains. The feature cannot be turned off by Recent Change.

7.06 Recent Change Form 809 is used to enable and disable feature bits. The entry **F20**, which is assigned for the 10-digit AIN Trigger expansion capability, indicates if this capability is active in the switch. A setting of **ON** indicates that the capability is active. The default is **OFF**.

7.07 The purchase indicator is ***never*** set to **Y** unless Feature 375 has been purchased by the customer. The ODA purchase indicator is provisioned on a non-generic retrofit as follows:

1. The line engineer fills out a T2 form when the customer orders the feature and sends the form to Network Group-Office Data Assembler (NG-ODA).
2. The NG-ODA runs the update secured bit process and provides the information to Field Support for an overwrite.
3. Field Support works with the customer to apply the overwrite.

8. Input/Output Manual Pages

8.01 The following Input and Output Manual Pages are affected by this feature:

- **VER:MISC** (Input)
- **VER:CODEGRP:TYPE** (Input and Output).

MESSAGE ID	VER:MISC
WORK CENTER	MAC, MOC
GENERIC	4E23 Rel. 3 and later
CLASS	VER MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   This is a general purpose input message which requests specific information based upon the input to the **MISC** keyword.

   Format [1] requests carrier identification code data.

   Format [2] requests the status of internal feature bits, proprietary, and non-proprietary feature indicators.

   Format [3] requests Advanced Intelligent Network (AIN) data.

   Format [4] requests the service identity set for hourly End-to-End Class Of Service (ECOS) traffic data.

   Format [5] requests the service identity set for hourly Real Time Network Routing (RTNR) traffic data.

   Format [6] requests the AIN/ Local Number Portability (LNP) Called Number Trigger (CNT) assignment data.

2. **FORMAT**

   [1] **VER:MISC CIP:CIN** *a***!**

   [2] **VER:MISC ONOFF!**

   [3] **VER:MISC AINITM!**

   [4] **VER:MISC SISHER!**

   [5] **VER:MISC SISHRR!**

   [6] **VER:MISC TRGASN:NPANXX** *b***!**

3. **EXPLANATION OF MESSAGE**

   CIP Requests carrier identification code data for the input Circuit Identification Number (CIN). The **CIN** keyword must be input when Carrier Identification Parameter (**CIP**) is input.

a	Circuit Identification Number (**CIN**). Specified to output the carrier identification codes for a given CIN.
ONOFF	Requests the status of internal feature bits, proprietary, and non-proprietary feature indicators.
AINITM	Requests Advanced Intelligent Network data.
SISHER	Requests the service identity set for hourly End-to-End Class Of Service (ECOS) traffic data.
SISHRR	Requests the service identity set for hourly Real Time Network Routing (RTNR) traffic data.
TRGASN	Requests the AIN/LNP Called Number Trigger assignment data.
b	Numbering Plan Area and Exchange Number (**NPANXX**) 6-digit number (*000000-999999*).

4. **SYSTEM RESPONSE**

NA	Not Accepted.
PF	Printout Follows.

5. **REFERENCES**

PIDENTs
- IOCPIMC4
- VRFYCNTL
- VRFYINPT
- VRFYMISC

Output Messages
- *VER:MISC-AINITM*
- *VER:MISC-ONOFF*
- *VER:MISC-TRGASN*
- *VER:SISETHER*
- *VER:SISETHRR*
- *VER:TSG-CICS*

MESSAGE ID	VER:CODEGRP-TYPE
WORK CENTER	MAC, MOC
GENERIC	4E23 Rel. 3 and later
CLASS	VER MESSAGE
APPLICATION	4E
TYPE	Input

1. **PURPOSE**

   To request verification of the domain type information.

2. **FORMAT**

   VER:CODEGRP:TYPE *a***!**

3. **EXPLANATION OF MESSAGE**

   a Domain type:

   FCID— Determines whether a call is a carrier call.

   SDAC—
   Determines whether a domain is allowed for a six digit Called Number Trigger (CNT) for either the Advanced Intelligent Network (AIN) or Local Number Portability (LNP) features.

   TDAC—
   Determines whether a domain is allowed for AIN 10 digit called number trigger.

4. **SYSTEM RESPONSE**

   PF Printout Follows.

5. **REFERENCES**

   PIDENTs
   IOCPIMC4
   VRFYCNTL
   VRFYINPT
   VRFYOUT
   VRFYRTNG

   Output Message
   VER:CODEGRP-TYPE

MESSAGE ID	VER:CODEGRP-TYPE
WORK CENTER	MAC, MOC
GENERIC	4E23 Rel. 3 and later
APPLICATION	4E
TYPE	Output

1. **FORMAT**

VER:CODEGRP;OPT(TYPE): *DOMTYPE a,*

DOM DOM DOM DOM DOM
b, b, b, b, b,
b, b, b, b, b,
b, b, b, b, b,
b, b, b, b, b,

2. **REASON FOR OUTPUT**

To provide the ability to verify which domains have a specified indicator set.

3. **VARIABLE FIELD DEFINITIOINS**

a Domain type:

FCID— Determines whether a call is a carrier call.

SDAC—
Determines whether a domain is allowed for a six digit Called Number Trigger (CNT) for either the Advanced Intelligent Network (AIN) or Local Number Portability (LNP) features.

TDAC—
Determines whether a domain is allowed for AIN 10 digit called number trigger.

b Domain: 20-83, APN, ATNS, DAVT, DEC0, DEC1, DEC6, DED, DER0 DER1, DER6, DEV, GSDN, HA1C, I384, I56D, I64C, INCD, INTO, INTT, IVT, LSI, N64C, N64R, NH0C, NSR, POTS, SDNA, VRFY,

4. **ACTION TO BE TAKEN**

None.

5. **REFERENCES**
PIDENTs
IOCPIMC4
IOCPPVR4

VRFYCNTL
VRFYINPT
VRFYOUT
VRFYRTNG

Input Message
VER:CODEGRP-TYPE

Local Exchange Carrier Local Number Portability OA&M Enhancements Feature (517)

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Local Exchange Carrier Local Number Portability OA&M Enhancements Feature (517)

4

1. Feature Description

1.01 This feature describes Local Number Portability (LNP) measurements that allow network managers to identify and monitor NP effects on local networks. This feature also lists the changes governing the Connecting Network Access (CNA) Automatic Message Accounting (AMA) records.

1.02 The LNP was introduced in the 4E22 Release 2 Generic (Feature 450, 234-090-222) and allowed the *4ESS* switch to act as an intermediate exchange in local networks. Number portability provides the network infrastructure to give subscribers the capability to physically move from one switch to another while retaining their original Directory Number (DN). This capability is referred to as porting.

1.03 The *4ESS*™ switch checks the contents of a ported number Generic Address Parameter (GAP). The switch is searching for Advanced Intelligent Network (AIN) Called Number Triggers (CNTs) of LNP calls that are ported into the Local Exchange Carrier (LEC) network [that is, received at a network interconnection point—either a terminating access tandem for calls received from Interexchange Carriers (IXCs) or a terminating local tandem for calls received from another local carrier].

1.04 Number portability introduced a new AIN LNP trigger and the concept of a Location Routing Number (LRN). The LRN is a 10-digit number (NPA-NXX-XXXX) that uniquely identifies an end office or rate center within the end office, and is used as a virtual address for the switch serving ported subscribers. When a DN is defined as portable, checks are made to determine if a query should be launched to the Service Control Point (SCP). When a query is launched, service logic in the SCP determines if the DN has been ported and returns either an LRN (for a ported number)

or the original DN (for a non-ported number). Calls to ported numbers are routed using the LRN. Calls to a non-ported number are routed using the DN.

2. Call Flow (Not Affected)

3. Provisioning (Not Affected)

4. Recording

4.01 When a call received over a Trunk Subgroup (TSG) with the CNA recording option set to **non-FGD calls** and the incoming call results in a Service Switching Point (SSP)/800 or AIN query, a CNA record is generated (exactly like Feature 450) along with the following requirements:

- AMA records are generated for the SSP/800 or AIN query.
- The terminating number field of the CNA record is populated with the called number received over the incoming trunk.

4.02 When an incoming call to the *4ESS* switch is received over a TSG with the CNA recording option set to **calls resulting in an LNP query and generating an LNP module**, a CNA record is generated the same as for Feature 450 only when the *4ESS* switch performs an LNP query for the incoming call.

Exception: No CNA record is generated when the called party number is changed via an SSP/800 or AIN trigger ***before*** the *4ESS* switch performs an LNP query.

5. Network Management

5.01 New and existing LNP measurements are sent to NetMinder-NTM, a Lucent Operations System which performs network traffic management. The NetMinder-NTM allows network managers to identify and monitor NP effects on local networks. See Section 6, **Maintenance/Troubleshooting** for descriptions of these measurements.

6. Maintenance/Troubleshooting

6.01 Table 4-A defines the new 5-minute peg counts sent to NetMinder-NTM.

Table 4-A. New 5-Minute Peg Counts

Count	Description
LNP Tandem Calls	This count measures the number of calls received with FCI bit M set to **number translated**.
LNP Calls Canceled by MCG	This count measures the number of LNP calls canceled by Manual Call Gap (MCG) control and is pegged by network management whenever an LNP call is canceled by MCG.
LNP Queries Blocked by SCP Overload ACG	This count measures the number of LNP queries blocked by an SCP Overload Automatic Call Gap (ACG) and is pegged by network management whenever an LNP query is blocked by an SCP Overload ACG.
LNP Queries Blocked by SMS-Initiated ACG	This count measures the number of LNP queries blocked by an Service Management System (SMS)-initiated ACG control and is pegged by network management whenever an LNP query is blocked by an SCP Overload ACG.

6.02 In addition to appearing on Message-Service Center-Outgoing Measurement Set (MSC-OMS) reports, the following peg counts are sent to NetMinder-NTM on a 5-minute basis:

- LNP Queries Sent
- LNP Queries Successful
- LNP Ported Number Calls
- Integrated Services Digital Network (ISDN) User Part (UP) Release messages that contain ANSI cause value 26
- LNP tandem calls.

6.03 The following measurements are included in the On-Site Operations Report (OSOR) Machine Load and Service Summary (MLSS) Report:

- LNP Queries Sent
- LNP Queries Successful
- LNP Ported Number Calls
- **ISUP REL** message with ANSI Cause 26 received.

7. Transition Considerations

Feature Dependencies

7.01 This feature depends on Feature 450, *Number Portability—Local Exchange Carrier* (4E22 Release2 Generic, 234-090-222). Customers must have purchased Feature 450 before this feature can be activated.

Deployment Requirements

7.02 It is not necessary for the 4E23 Release 3 Generic to be deployed in all *4ESS* switches for this feature to be fully operational.

Feature Activation

7.03 This feature is turned on automatically by software deployment.

8. Input/Output Manual Pages (Not Affected)

LNP/AIN Domain Option Feature (534)

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LNP/AIN Domain Option Feature (534)

5

1. Feature Description

Background

1.01 Local Exchange Carrier (LEC) Local Number Portability (LNP) allows the *4ESS*™ switch to act as an intermediate exchange (local tandem or terminating access tandem) in local networks implementing Number Portability (NP) using the Location Routing Number (LRN) method. NP provides the network infrastructure to give subscribers the ability to physically move from one switch to another while retaining their original Directory Number (DN). This ability is known as "porting".

1.02 The LRN is a 10-digit number (NPA-NXX-XXXX) that uniquely identifies the end-office or rate center within the end-office, and is used as a virtual address for the switch serving ported subscribers. When a DN is defined as portable via provisioning of the new LNP trigger, checks are made to determine whether a query should be launched to the Service Control Point (SCP). When a query is launched, service logic in the SCP determines whether the DN has been ported and returns either an LRN (if the number is ported) or the original DN (if the number is not ported). Calls to ported numbers are routed using the LRN returned from the SCP. Calls to non-ported numbers are routed using the DN as usual.

1.03 Since LEC LNP is an extension of Advanced Intelligent Network (AIN) Called Number Trigger (CNT) capabilities, the number returned by the LNP SCP is translated in the POTS (or appropriate data), which is done for numbers returned by an AIN SCP. BellSouth requested that the option of using the Incoming Trunk (ICT) domain to translate numbers returned by the SCP be provided, since they make

extensive use of non-POTS domains in local routing and they wish to continue this practice.

Description

1.04 This feature allows the *4ESS*™ switch to perform special domain determination logic when preparing to translate the called number received from the AIN or LNP SCP. If this feature is active, the *4ESS* switch translates the called number returned by the SCP in the same domain which the original called number was translated. If the called number received in the incoming signaling was not translated, then the *4ESS* switch defaults to the appropriate data or voice domain (82, N64C, or POTS). This domain determination only applies when local routing is used (for example, the SCP does not request carrier routing, or the carrier ID returned is the "local" carrier (0110, for example).

Call Handling

1.05 If this feature is activated, then the domain used to translate the called number prior to launching the AIN or LNP Info_Analyzed query is used to translate the address digits returned by the SCP. This applies only when local routing is requested by the SCP (that is, when no carrier ID is returned by the SCP, or when the carrier ID is returned is the local (0110) carrier).

1.06 If the called number is not translated prior to the query, or this feature has not been activated, then existing domain rules apply (that is, the domain used will be POTS or the appropriate data domain).

2. Call Flow (Not Affected)

3. Provisioning

Recent Change Form 809

3.01 Item **OD4F21** is assigned as an office parameter to indicate whether or not the LEC LNP/AIN Domain Feature is enabled in the switch. "On" means that the feature is enabled; the default is "Off", meaning the feature is disabled.

3.02 Verify forms 16az and 8j are associated with the ON or OFF entries on RC Form 809.

4. Recording (Not Affected)

5. Network Management (Not Affected)

6. Maintenance/Troubleshooting (Not Affected)

7. Transition Considerations

Feature Interactions

7.01 This feature depends on the following features:

- AIN Feature 375 (4E18 Release 2 Generic; 234-090-182).
- LEC LNP Feature 450 (4E22 Release 2 Generic; 234-090-222).

7.02 This feature works with the following LNP Enhancement features:

- Feature 488 (4E22 Release 4 Generic; 234-090-224).
- Feature 515 (4E23 Release 3 Generic; 234-090-233).
- Feature 516 (4E23 Release 3 Generic; 234-090-233).
- Feature 517 (4E23 Release 3 Generic; 234-090-233).

Deployment Requirements

7.03 It is not necessary for all *4ESS* switches in the network to be running the 4E23 Release 3 Generic for this feature to be fully operational.

Feature Activation

7.04 This feature is activated or deactivated as described in the **Provisioning** section of this chapter.

8. Input/Output Manual Pages (Not Affected)

Release Summary—4E23 Release 3 Generic

6

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Release Summary—4E23 Release 3 Generic

6

1. Growth and Retrofit Documents

1.01 The Growth and Retrofit Planning Group reports that the new features in the 4E23 Release 3 Generic have no impact on the Growth and Retrofit documents.

2. Input/Output Messages

2.01 The following lists include the input and output messages for the 4E23 Release 3 Generic. A notation is included indicating whether each message is new, revised, or deleted. If the change is related to a specific feature, the feature number is included in parentheses.

- 4E23R3 Input Messages (IM-4B000-01)
  - alw:macli REV (535)
  - dump:xtsi-spu NEW (4043)
  - inh:macli REV (535)
  - rst:xtsi-all NEW (4043)
  - set:clk REV (476)
  - stop:test-perif DEL
  - stop:test-pusy REV
  - test:perif DEL
  - test:pusys REV
  - upd:hdata REV (5005)
  - ver:codegrp-type REV (516)
  - ver:misc REV (516)
  - ver:office REV (6142)

- 4E23R3 Output Messages (IM-4B000-01)
  - dump:xtsi-spu REV (4043)
  - op:sdc REV (4043)
  - rept:macli-gutl NEW (535)
  - rept:prog REV (535)
  - rst:xtsi-schedul NEW (4043)
  - test:perif DEL
  - test:pusys REV
  - ver:codegrp-03 NEW (516)
  - ver:codegrp-06 NEW (516)
  - ver:codegrp-09 NEW (516)
  - ver:codegrp-12 REV (516)
  - ver:codegrp-3 DEL
  - ver:codegrp-6 DEL
  - ver:codegrp-type REV (516)
  - ver:misc-ainitm REV (516)
  - ver:misc-trgasn NEW (516)

- Proprietary Input Messages
  - dump:xtsi-spu DEL (4043)
  - rst:xtsi-all DEL (4043)
  - test:sd REV (6426, 4880b)
  - test:tcapdsd REV (6487)
  - upd:hdata NEW (5005)
  - ver:ascit REV (5822)
  - ver:misc REV (6142)
  - ver:misc-fhtosid REV (6266)
- Proprietary Output Messages
  - dump:xtsi-spu REV (4043)
  - OP:sdc DEL (4043)
  - rst:xtsi-schedul DEL (4043)
  - test:sd REV (4880b)
  - test:tcapdsd REV (6487)
  - ver:codegrp-03 NEW (516)
  - ver:codegrp-06 NEW (516)
  - ver:codegrp-09 NEW (516)
  - ver:codegrp-12 REV (516)
  - ver:codegrp-6 DEL
  - ver:codegrp-9 DEL
  - ver:memory-em NEW (6142)
  - ver:misd-csrsdx NEW (6142)
  - ver:office NEW (6142)

- 4AP16R3 Input Messages
  - aud:fsblk REV
  - copy:p-all REV
  - dump:mhd-def REV
  - load:dfc-pump REV
  - op:nodes REV
  - ver:lvfile REV
- 4AP16R3 Ouput Messages
  - load:dfc-pump REV
  - op:nodes REV
  - ver:lvfile REV

3. OS Interfaces

NOTE:
The information in this item is based on the Project Plan and the Product Release Document (PRD) for this release.

3.01 There are no interfaces with Operations Support Systems documented in the PRD for LEC features.

4. New or Changed Alarms

NOTE:
The information in this item is based on the features documented in the Product Release Document for this release.

4.01 There are no new alarms related to the features documented in the Product Release Document for the 4E23 Release 3 Generic.

5. Measurements/OSOR

The information in this item is based on the features documented in the current Product Release Document. There are no new measurements in this release for LEC features.

6. Feature Activation Summary

6.01 The following is a summary of how the features documented in the PRD for this release are activated:

(1) **Feature 476—Year 2000 Transition for the LEC**

This feature is turned on automatically by software deployment.

(2) **Feature 515—Analyze Ported Number Gap for AIN Called Number Triggers**

This feature is activated by Recent Change Form 809. In order for this feature to be activated, the customer must purchase Feature 375 (Advanced Intelligent Network) and Feature 450 (Number Portability).

(3) **Feature 516—AIN 6-Digit Called Number Trigger Expansion**

This feature is activated by Recent Change Form 809. In order for this feature to be activated, the customer must purchase Feature 375 (Advanced Intelligent Network).

(4) **Feature 517/517a—LEC Number Portability OA&M Enhancements**

This feature is turned on automatically by software deployment. In order for this feature to work, the customer must have purchased Feature 375 (Advanced Intelligent Network) and Feature 450 (Number Portability).

(5) **Feature 534—LEC Number Portability/AIN Domain Option**

This feature is activated by Recent Change Form 809. In order for this feature to be activated, the customer must purchase Feature 375 (Advanced Intelligent Network) and Feature 450 (Number Portability).

Abbreviations and Acronyms

A

ACG
Automatic Call Gap

AIN
Advanced Intelligent Network

AMA
Automatic Message Accounting

C

CNA
Connecting Network Access

CNT
Called Number Trigger

D

DN
Directory Number

F

FGD
Feature Group-D

G

GAP
Generic Address Parameter

I

ICT
Incoming Trunk

ISDN
Integrated Services Digital Network

ITN
Integrated Test Network

IXC
Interexchange Carriers

L

LEC
Local Exchange Carrier

LNP
Local Number Portability

LRN
Location Routing Number

M

MLSS
Machine Load and Service Summary

MSC-OMS
Message Service Center-Outgoing Measurement Set

N

NCC
Network Control Center

NESAC
National Electronic Switching Assistance Center

NG-ODA
Network Group-Office Data Assembler

NP
Number Portability

NTM
Network Traffic Management

O

ODA
Office Data Assembler

ODMS
Office Data Management System

OSOR
On-Site Operations Report

P

PECC
Product Engineering Control Center

PRD
Product Release Document

S

SCP
Service Control Point

SMS
Service Management System

SSP
Service Switching Point

T

TIRM
Technical Information Resource Management

TSG
Trunk Subgroup

U

UP
User Part