

# BARS Overview

Basic Alternate Route Selection (BARS) refers to Meridian 1 functionality supporting least cost routing or alternate route selection for a single Meridian 1 PBX. This lesson provides an understanding of how BARS operates and the features applied to address various requirements.

BARS provides an easy outbound dialing plan for users. There is no need to remember access codes to different trunk facilities. One access code is used for all outbound calls.

BARS completes outgoing calls automatically over the least expensive available at the time of the call.

BARS includes functionality to partition users into different “calling privilege classes” based on job function or corporate policy.

BARS supports requirements to:

- Restrict certain dialing sequences

- Recognize and redirect calls based on dialing sequence

- Turn “off” certain facilities during specified times

Change users' call privileges during specified days and times

Allow or require users to queue for least expensive facilities when ATB

Modify the dialed number to conform with the facility selected for the call

## **BARS Call Flow**

Basic Alternate Route Selection (BARS) enables outgoing calls to be routed over the least expensive route automatically. Following is a high level explanation of the call flow:

A user dials the BARS Access Code (AC1) followed by an external number.

The access code triggers the BARS software

The BARS software does a “look up” on the number or portion of the number dialed.

The BARS software associates the dialed number with a list of outgoing trunk facilities on which to complete the call.

BARS automatically completes the call over the least expensive trunk available based on the caller's class of service and the time of day the call was made.

While the above is a high level call flow example, there are a number of controls that are, or can be, configured in the call flow decision process.

## **Network Translation**

Is the number dialed defined for processing? The BARS software does a look-up on the number dialed to determine the routing table (Route List Index) to use to complete the call. BARS Network Translations include area code (NPA), local exchanges (NXX), and special numbers (SPN). BARS can screen up to 19 digits to determine the appropriate routing table; however, most translations are 1+NPA, NXX, 1+NXX, or Special Numbers such as 011, 411, etc.

## **SDRR**

Are certain dialed digits to be restricted or recognized? SDRR allows for screening of dialed digits following the network translation.

Supplemental Digit Restriction defines certain digit sequences that are totally restricted such as 976 following an area code (NPA) translation. In these circumstances calls are blocked and subject to the customer defined NRES intercept treatment associated with blocked calls.

Supplemental Digit Recognition defines certain digit sequences that should be recognized such as the PBX's DID range following an exchange (NXX) translation. In this circumstance the call is processed as an internal call and does not employ the use of the Route List Index.

## **ITGE**

ITGE applies to calls originating on tie trunks. Based on the tie trunk group/route ITGE either restricts all or certain dialed digits following the network translation.

## **ARRN**

ARRN applies to Special Number (SPN) translations. ARRN identifies/recognizes certain dialed digits following the network translation. In this circumstance, the call will be directed to use an alternate routing table (Route List Index) as opposed to routing table associated with the network translation

Over which facilities can this call attempt to complete?

## **RLI**

A Route List Index is a table of route/trunk group choices on which the system will attempt to complete a call. The Network Translation associates the number dialed by the caller with the Route List Index.

Up to 64 trunk routes can be defined in a RLI. Each trunk route is referred to as an Entry. For each Entry in the RLI the addresses the following:

## **TOD**

TOD allows for individual trunk groups in a RLI to be turned off during certain times of the day.

Is the dialed number an Area Code or Special Number? If so, are any dialed digits restricted based on facility?

## **FCAS**

FCAS applies to area code (NPA) calls only. FCAS provides for area code plus exchange (NPA+NXX) screening based on individual trunk groups in a RLI. FCAS is defined in tables which are applied to individual entries within a RLI. A FCAS table either allows or denies a range of or specific NXXs within an area code (NPA).

## **FSNS**

FSNS applies to Special Number (SPN) calls only. FSNS provides 3 digit screening based on individual trunk groups in a RLI. FSNS is defined in tables which are applied to individual entries within a RLI. A FSNS table either allows or denies a range of or specific codes following a special number (SPN).

## **FRL**

Facility Restriction Level is the means by which callers may be restricted from accessing a specific entry in an RLI. A FRL is defined for each entry in a RLI. The FRL is the minimum FRL that the caller must have to access the entry. The caller's FRL (defined in his/her Network Class of Service) must be equal to or greater than the FRL defined for the entry in the RLI.

## **NCOS**

NCOS is assigned to stations, tie trunks, and authorization codes. Within an NCOS several parameters are defined including an FRL. The FRL of the caller (defined in his NCOS) is compared to entries in an RLI to determine if the entry can be used for the call.

## **RCTL**

Routing Control provides for remapping of the caller's NCOS during certain times of the day, certain days of the week, and/or when manually activated via a key on the attendant console. When Routing Control is active a caller's NCOS (and associated FRL) may remain the same or may be raised or lowered.

Note: BARS will also use the Class of Service (CLS) of the station, tie trunk or authcode to determine access to a given entry. Optionally, BARS may be configured to assess Trunk Group Access Restrictions (TGAR) as well.

## **OHQ**

Off-hook Queuing forces a caller to wait – on line - for a cheap trunk during all trunks busy periods (ATB). OHQ only applies when activated for the customer, a cheap entry (referred to as the ISET) in the RLI allows OHQ, and the caller's NCOS allows OHQ.

## **CBQ**

Call Back Queuing allows a caller – during periods when cheap trunks are ATB -- to activate “ring again” and wait to be called back with a cheap trunk. CBQ only applies when activated for the customer, a cheap entry (referred to as the ISET) in the RLI allows CBQ, and the caller's NCOS allows CBQ.

## **NCOS**

NCOS is assigned to stations, tie trunks, and authorization codes. Within an NCOS several parameters are defined including queuing capabilities.

Is the call about to use a facility tagged as expensive? Alert the caller?

## **ESET**

The Extended Set are those choices in a RLI that are not included in what is called the Initial Set (ISET). The ISET is a count of the leading entries in the RLI that are considered least expensive facilities. For example the first five entries in RLI 12 are considered “cheap”. Therefore the ISET is 5. The remaining entries are the ESET. The system considers an entry in an RLI as “expensive” when it is in the ESET and tagged Expensive YES.

## **ERWT**

Expensive Route Warning Tone alerts a caller (who has not queued) that his/her call is about to complete on an ESET facility tagged as expensive. ERWT is only provided when activated for the customer, the caller’s NCOS allows ERWT, and the call is about to complete on an entry in the ESET that is tagged as expensive.

## **DMI**

DMI provides for deleting digits dialed by the caller and/or inserting other digits to conform to the dialing requirements of the trunk selected to complete a call. DMI is table driven. The appropriate table is associated with entries in an RLI.

# **BARS Database Administration Overview**

The following overlays/programs/loads are used to configure a BARS database:

## **Overlay 86**

ESN Data

Route List Indexes (RLI)

Incoming Trunk Group Exclusion (ITGE)

Digit Manipulation Tables (DMI)

## **Overlay 87**

Free Calling Area Screening Tables (FCAS)

Free Special Number Screening Tables (FSNS)

Network Control Data (NCTL)

## **Overlay 90**

Number Plan Area Code (NPA) Translations

Central Office Code (NXX) Translations

Special Number (SPN) Translations

## **Other Overlays**

Overlay 15 Customer Data (CDB)

Overlay 10/11 Station Data

Overlay 88 Authorization Codes

Overlay 16 Route Data (RDB)

Overlay 14 Trunk Data

# Implementation Tasks

This lesson provides the steps required to configure Basic Alternate Route Selection (BARS) for a customer. Meridian 1 order of entry for a new customer is also provided.

## Configuration Steps

Collect and record information on data sheets for each NCOS group. (LD 87)

Collect info to define BARS feature parameters and record on data sheets. (LD 86)

Collect info for each Digit Manipulation Index (DMI) and record on data sheets. (LD 86)

Collect info for each Free Calling Area Screening (FCAS) and record on data sheets. (LD 87)

Collect info for each Route List associated with a DMI and record on data sheets. (LD 86)

Collect info for each Incoming Trunk Group Exclusion index (ITED) and record on data sheets. (LD 86)

Collect BARS translation data and record on data sheets. (LD 90)

Collect data to assign a Network Class of Service group number to a list of items

Program the information

## **Order of Database Entry for a New Customer**

LD 17: CFN

LD 15: CDB

LD 16: RDB

LD 14: TRK

LD 12: ATT

LD 86: ESN

LD 86: DGT

LD 87: FCAS

LD 87: NCTL

LD 86: RLB

LD 86: ITGE

LD 90: NET

LD 88: AUB

LD 88: AUT

LD 10: SINGLE-LINE SETS

LD 11: MULTI-LINE SETS

## **ESN Data**

This lesson provides the feature description, operating parameters and feature implementation for the Electronic Switched Network data block. LD 86, the Electronic Switched Network (ESN) data block administration overlay, is the first data block which must be established when implementing a BARS database. It is used for defining BARS system maximums for items such as Route List Blocks (RLB), Digit Manipulation Indexes

(DMI), Incoming Trunk Exclusion (ITGE), etc. It is also used to define the AC1 access code, Time of Day schedules and Routing Control.

## **Operating Parameters**

The parameters defined in the ESN data block are:

Capacities for various tables and indexes

BARS Access Code

Expensive Route Parameters

Time of Day Schedules

Routing Control Parameters

Use of TGAR Restrictions

## **Capacities for Tables and Indexes**

In the ESN data block you must define the maximum tables for a BARS data base. When upper limit for a given table has been met an error code will prompt you to increase the related table limit.

## **SDRR**

SDRR is a part of the Network Translation Data. SDRR restricts certain digit sequences dialed following an area code, local exchange, or special number. SDRR also recognizes certain digit sequences and redirects those calls to an internal extension, the attendant or an alternate route index.

LD 86

FEAT ESN

MXSD xxxxx

## **ITED**

ITED applies to calls originating from specified TIE trunks. ITED stops callers on a Meridian 1 from utilizing the network to reach destinations in their home NPA, or other restricted numbers.

LD 86

FEAT ESN

MXIX xxxxx

## DMI

DMI tables convert the dialed number to a digit sequence compatible with the trunk type selected to complete the call.

LD 86

FEAT ESN

MXDM xxxx

## RLI

A RLI is a table; associated with a network translation listing the outgoing trunk groups/routes in the order the system will search for eligibility to complete a call.

LD 86

FEAT ESN

MXRL xxxxx

## **FCAS**

FCAS tables apply to NPA+NXX calls only. It allows or denies a call to complete on an RLI entry based on the area code and local exchange dialed.

LD 86

FEAT ESN

MXFC xxxx

## **FSNS**

FSNS tables apply to SPN calls only. It allows or denies a call to complete on an RLI entry based on the digits dialed following a special number.

LD 86

FEAT ESN

MXFS xxxx

## **BARS Access Code**

The BARS Access Code is a one to four digit number that cannot conflict with the customer's existing numbering plan. Dial tone may or may not be provided after the BARS Access Code is dialed.

LD 86

FEAT        ESN

AC1 x..x

DLTN

## **Network Invalid Intercept Treatment**

The Intercept Treatment provided will be based on the call originator and will be either Overflow, Route to the attendant, or a Recorded Announcement.

LD 15

TYPE INT

NINV (OVF) (OVF) (OVF) (ATN)

RANR xxx (Prompted only is RAN is defined in one or more of the NINV fields.)

## **Expensive Route Parameters**

Expensive Route Warning Tone (ERWT) alerts a caller that an expensive route has been selected to complete the call. The caller has the option of accepting, aborting, or possibly depressing the Ring Again key and entering the Call Back Queue for inexpensive Entries. ERWT in LD 86 turns Expensive Route Warning tone on for the customer.

LD 86

FEAT ESN

ERWT

## **Time of Day Schedules**

BARS has up to eight (0-7) Time of Day Schedules (TODS) that will allow or deny a call access to an entry on a Route List Index based on the time of day the call was placed. An Entry can be turned “OFF” during the time defined in a specified TODS.

LD 86

FEAT ESN

TODS S AA BB CC DD

S = TOD schedule number (0-7)

AA = the hour that the TOD schedule begins (00-23)

BB = the minute that the TOD schedule begins (00, 15, 30, or 45)

CC = the hour that the TOD schedule ends (00-23)

DD = the minute that the TOD schedule ends (14, 29, 44, or 29)

## **Routing Control Parameters**

Routing Control (RTCL) allows a customer to reduce or increase a user's NCOS or specific time period each day or for an entire day. A NCOS Map (NMAP) lists the original set of NCOS values and corresponding set of alternate NCOS values. The alternate NCOS replaces the original NCOS when Routing Control is invoked.

LD 86

FEAT ESN

TODS 7 AA BB CC DD

RTCL

NMAP

ETOD

## **Use of TGAR Restrictions**

Trunk Group Access Restriction (TGAR) is a number assigned to a station or trunk, which identifies the facilities to which each user is allowed or denied direct access. TGAR can be used or ignored when placing a call through BARS and determining a user's entry eligibility.

LD 86

FEAT ESN

TGAR

# NCTL Network Control Data

Network Class of Service (NCOS) divides BARS users into groups with separate access restrictions. The NCOS determines each user's eligibility to make calls through BARS as well as privileges to other BARS features. Each station and TIE trunk in the system will be assigned a Network Class of Service. The maximum number of NCOS groups per customer is 100 (numbered 0-99).

There are network access characteristics that define each NCOS group. Eligibility for the following are considered:

Route List entry through Facility Restriction Level (FRL)

Equal Access (EQA)

Receive Expensive Route Warning Tone (ERWT)

Off-Hook Queuing(OHQ)

Call Back Queuing (CBQ)

# **NCOS**

NCOS divides station users into up to 100 different groups. Every NCOS references a table of features that defines the NCOS group's access to the outside world (through FRL) and to certain BARS features (ERWT, OHQ, and CBQ).

Items that have an NCOS assigned are:

Sets (LD 10 and 11)

Incoming TIE trunks (LD 14)

Attendant Consoles (LD 15)

DISA DNs (LD 24)

System Speed Call lists (LD 18)

# **FRL**

A Facility Restriction Level (FRL) is associated with each NCOS group. The FRL determines the Entries in a Route List each caller has eligibility to access.

Facility Restriction Levels are numbered from 0 to 7, with 0 being the lowest access and 7 being the highest access. The FRL assigned to the user's NCOS must be equal to or greater than the FRL assigned to the Entry in the Route List in order for a user to access the Entry.

## **Access Restrictions**

There are two access restrictions each station, TIE trunk and Authcode will be assigned in the system. The restrictions are:

Class of Service (CLS)

Trunk Group Access Restrictions (TGAR)

These access restrictions are interactions with the NCOS level of a station user.

## **Class of Service**

The Class of Service (CLS) restriction is assigned to each telephone and TIE trunk in the Meridian 1 system. The CLS determines the degree of access available for each user and TIE trunk.

There are eight possible Class of Service restrictions, however only two interact directly with BARS. The two restrictions for BARS are:

Conditionally Toll Denied (CTD) (default)

Conditionally Unrestricted (CUN)

The Meridian 1 system will use the station's NCOS to determine the Entry eligibility when a station user with CTD or CUN places a call through BARS.

## **Trunk Group Access Restriction**

Trunk Group Access Restriction (TGAR) is a number assigned to a station or trunk, which identifies the facilities that each user is allowed or denied direct access.

TGAR can be used or ignored when placing a call through BARS and determining a user's entry eligibility.

If a customer wants BARS to ignore TGARs, then TGARs and TARGs are used to deny stations direct access to trunk routes, which forces the user to place outgoing calls through BARS. If a customer wants BARS to use TGARs when determining a user's entry eligibility, the user's TGAR and NCOS must allow access before a user can gain access to a Route List Entry.

## **Basic Authorization Codes**

Authorization Codes (Authcode) enable users to temporarily override the Class of Service, TGAR, and NCOS restrictions assigned to a set. A user enters an Authcode to access different system facilities than would normally be allowed from a specific station. Authorization Codes have their own CLS, TGAR, and NCOS that take precedence over the station's access restrictions for the duration of the call.

Authorization Codes override Routing Control restrictions.

## **Equal Access**

Aggregators must provide transient users (hotel guests, hospital patients, etc.) the ability to selectively access any long distance carrier. Selective Equal Access (EQA) allows aggregators a choice in blocking direct-dialed calls that result in charges back to the originating telephone.

Equal Access dialing is supported on a per NCOS and per route basis. Equal Access supports COT, FEX, DID, and TIE routes. The restrictions are based on fixed pattern recognition to determine which calls are denied.

Equal Access allows operator assisted North American and International dialing by:

CAC (Carrier Access Code) + 0

CAC + 0 + NPA + NXX + XXXX

CAC + 01 + Country Code + National Number

Equal Access allows or denies Direct North American and International dialing by:

CAC + 1 + NPA + NXX + XXXX

CAC + 011 + Country Code + National Code

## **Expensive Route Warning Tone**

Expensive Route Warning Tone (ERWT) alerts a caller that an expensive route has been selected to complete the call. ERWT is three bursts of tone. The caller has the option of accepting, aborting, or possibly depressing the Ring Again key and entering the Call Back Queue for inexpensive Entries.

## **RLB / RLI**

Automatic Least Cost Routing is the method by which BARS automatically routes a call over the most cost-effective route available. BARS selects a route from a list of up to 64 outgoing routes to complete the call for each call that passes Network Translation.

A Route List is a list of outgoing routes over which calls to a particular destination may be completed. Each route in the list is called an Entry. BARS will always begin the search for an idle, eligible trunk with Entry 0 in a Route List.

A Route List can include any combination of outgoing trunks (COT, WATS, FEX, or TIE). The “least-cost” routes to a destination are the first Entries in a Route List and comprise the “Initial Set” (ISET) of routes. The less cost-effective routes are the last Entries in the list and comprise the “Extended Set” (ESET) of routes.

The items associated with Automatic Least Cost Routing are:

Route List parameters

Trunk Route cost effectiveness

Initial Set (ISET) and Extended Set (ESET)

Expensive Route Warning Tone (ERWT)

Route List Entry elements

## **Route List parameters**

Each Route List will include the following:

Index number (0-255)

Entries

Number of Entries that make up the Initial Set (ISET)

## **Building Route Lists**

A customer needs to determine the appropriate number of Route Lists required for outgoing BARS calls. The process is as follows:

List the customer's trunk routes by route number, type of trunk route, and calling area served by that route.

List the types of calls the customer will make by local, intrastate, interstate, interlata, intralata, and international.

A Route List is usually created for each type.

The customer may need additional Route Lists based on the following:

Users' level of access

Special facilities

FCAS limitations

DMI requirements

Identify each trunk route that can process calls to the destination for every Route List created.

Assign a Route List Entry number to each trunk route, starting with least expensive first.

Declare the ISET.

Assign each type of call a Route List number.

## **Trunk Route cost effectiveness**

The different types of trunks vary in cost effectiveness. The most common order of cost effectiveness from least to most expensive is:

TIE

FEX

OCC

COT

## **ISSET**

The Initial Set (ISSET) is the list of Entries in a Route List over which the system will attempt to complete a call before checking for Off-Hook Queuing (OHQ) or Call Back Queuing (CBQ).

Route List Entries should be listed in order of search from least to most expensive. After declaring the ISSET, the Entries not included are automatically called the Extended Set (ESET). The ISSET must be defined for queuing to take place.

## **ERWT**

Expensive Route Warning Tone (ERWT) alerts a caller with three bursts of tone that an expensive route has been selected to complete the call. The caller has the option of:

Completing the call on the expensive route

Aborting the call

Entering Call Back Queuing for inexpensive entries by using the Ring Again Key

# **TOD**

BARS has up to eight (0-7) Time of Day Schedules (TODS) that will allow or deny a call access to an entry on a Route List Index based on the time of day the call was placed. An Entry can be turned “OFF” during the time defined in a specified TODS.

Each TOD schedule specifies a period or periods of time in the 24 hour day with TODS 0 defaulting to the entire 24 hours of the day

TOD schedules are based on a 24 hour clock with midnight (00 00) being the start of the day and 11:59 p.m. (23 59) being the end of the day. The start time of a particular TOD schedule must be earlier than the end time of that TOD schedule.

The only valid start minutes are: **00 15 30 45**

The only valid end minutes are: **14 29 44 59**

# **FRL**

A Facility Restriction Level (FRL) is associated with each NCOS group. The FRL determines the Entries in a Route List each caller has eligibility to access.

Facility Restriction Levels are numbered from 0 to 7, with 0 being the lowest access and 7 being the highest access. The FRL assigned to the user's NCOS must be equal to or greater than the FRL assigned to the Entry in the Route List in order for a user to access the Entry.

## **RTCL**

Routing Control (RTCL) allows a customer to reduce or increase a user's NCOS or specific time period each day or for an entire day.

An NCOS Map (NMAP) lists the original set of NCOS values and corresponding set of alternate NCOS values. The alternate NCOS replaces the original NCOS when Routing Control is invoked.

There are three ways in which Routing Control can be invoked:

Time of Day Schedule 7 (TOD 7)

Extended TOD (ETOD)

Routing Control Key (RTC)

## **TOD 7**

Time of Day Schedule 7 is reserved in BARS for blocks of time within a 24 hour period that requires daily Routing Control. NCOS levels are reduced, increased, or remain the same for certain time periods each day.

## **ETOD**

Extended Time or Day (ETOD) identifies the day or days of the week when Routing Control is in effect for 24 hours. NCOS levels are reduced, increased, or remain the same for the entire 24 hours. The days are numbered from 1 to 7, with 1 = Sunday and 7 = Saturday.

## **RTC**

The Routing Control key is programmed on an Attendant Console. The attendant can manually invoke Routing Control at any time using the RTC key. When the RTC key is active, NCOS levels are reduced, increased, or remain the same. Routing Control is deactivated when the RTC key is pressed a second time.

## **FCAS**

Free Calling Area Screening (FCAS) is a BARS feature that allows or denies specific NXXs per NPA for individual Route List entries. FCAS provides the customer with the capability of six-digit (NPA + NXX) screening.

FCAS screens to determine the Entry in a Route List that is eligible for completing the call when dialed only in the format AC1+(1)+NPA+NXX+XXXX. FCAS has the capability of denying an NPA+NXX on one Entry and allowing the same NPA+NXX on another Entry in the same Route List.

## **FSNS**

FSNS applies to Special Number (SPN) calls only. FSNS provides 3 digit screening based on individual trunk groups in a RLI. FSNS is defined in tables which are applied to individual entries within a RLI. A FSNS table either allows or denies a range of or specific codes following a special number (SPN).

## **OHQ**

The system can offer Off-Hook Queuing (OHQ) when a call encounters all trunks busy in the ISET. Off-Hook Queuing has eligibility and availability tests that must be passed before OHQ is offered. OHQ allows a user to

remain off-hook for up to 60 seconds while the system searches for an eligible trunk to become idle from the Routes in the ISET.

## **CBQ**

Call Back Queuing (CBQ) gives the call originator the option to press their Ring Again key and queue for the eligible ISET routes when a call encounters all trunks busy in the ISET and OHQ has either failed or is not available. Station users can remain in the CBQ until the system finds an eligible trunk or the user cancels the Ring Again feature.

## **DMI**

Digit Manipulation is a service of BARS that determines when certain trunks are accessed, the digits dialed by the station user may be manipulated to conform to the dialing requirements of that particular trunk. BARS uses Digit Manipulation Indexes (DMI) to modify the dialed digits in order to produce a number acceptable to the facility that is routing the call.

## **Elements of Digit Manipulation**

Each Entry in a Route List is referenced by Digit Manipulation Indexes.

Only one DMI may be referenced per RLI Entry.

Digits may be deleted or inserted. On a dialed number, the system **deletes** leading (beginning) digits first, then **inserts** leading digits.

DEL (Delete) is the quantity of leading digits that are to be deleted from the dialed number.

INST (Insert) is the actual digits that are to be inserted at the beginning of the dialed number.

## **Intercept**

Once a call has reached an RLI (i.e., the call has passed all previous requirements such as AC1 and network translations) and is denied by programming in the route list index, the call will be presented intercept treatment as specified at NBLK in LD 15, type INT.

## **Feature Implementation**

### **Time of Day**

Time of Day Schedules are programmed in the ESN data block in LD 86 and applied to Entries in the Route List Index data block in LD 86.

## **Facility Restriction Level**

Facility Restriction Levels associated with NCOS values are programmed in LD 87. LD 86 will reference the minimum FRL required in order to allow access to each entry on the Route List Index.

## **Routing Control**

Routing Control is provisioned in the ESN data block in LD 86. A key must be programmed on the Attendant Console in LD 12 to invoke Routing Control manually.

## **Off-Hook Queuing**

Off-Hook Queuing is programmed for the customer and NCOS in LD 87. The entry must be in the ISET and allow OHQ, which is programmed in LD 86. The OHQ availability test is based on a threshold programmed in LD 16 for the outgoing facilities.

## **Call Back Queuing**

Call Back Queuing is programmed for the customer and NCOS in LD 87. When a caller is offered CBQ, they will receive the standard 30 seconds of overflow or a Recorded Announcement followed by 30 seconds of

overflow. Each Entry in the RLI is programmed with CBQ in LD 86. The Ring Again feature must be programmed on a user's phone in order to access CBQ.

## **Digit Manipulation**

The maximum number of Digit Manipulation tables must be established in the LD 86 ESN data block before any tables can be built. Digit Manipulation tables are built in the LD 86 in the DGT data block. The tables are referenced by the entries in a RLI data block. There may be up to 19 leading digits deleted and up to 31 leading digits inserted per Digit Manipulation table.

## **LD90 NET - Network Translation Data**

Network Translations are performed once the Meridian 1 recognizes that a user has dialed the BARS Access Code. Network Translation Tables are used to provide the Electronic Switched Network with a 1 to 19 digit translation capability. The Meridian 1 translates the dialed BARS access code, processes the call through BARS, and selects the appropriate Network Translation Table. The Route List used to process the call is determined by the BARS translation.

The four Network Translations are:

NPA

NXX

SPN

HNPA

There are two other functions of Network Translations. They are:

Supplemental Digit Restriction (SDRR)

Supplemental Digit Recognition (SDRR)

Supplemental Digit Restriction is used to allow or deny a specific number or range of numbers after a valid NPA, NXX, or SPN is dialed. Supplemental Digit Recognition recognizes specific digit sequences, such as a customer's local telephone numbers, and redirects those calls to an internal station, the attendant or an alternate route list index.

Network Translation is the process within BARS software that identifies the NPA, NXX, SPN, or HNPA dialed by the station user and determines over which Route List the call is to be routed.

When programming Network Translations, the numbers must be unique from the left when reading the number. Identical NPAs, NXXs, SPNs, or HNAs cannot be provisioned in the system.

## **NPA Digit Translation**

The purpose of the NPA Network Translation is to search the Translation Table and locate the NPA dialed by the user. Once it has been recognized, the system will determine the Route List to route the call.

The number must be in the proper NPA format.

3 to 10 digits in length

4 to 11 digits in length (1+Dialing)

There is no limit to the number of NPAs in the system, however the NPA digits must be in a certain range.

**N** = 2 to 9

**P** = 0 to 9

**A** = 0 to 9

## **NXX Digit Translation**

The NXX Network Translation locates the NXX dialed by the user and determines to which Route List the call is to be routed.

The number must be in the proper NXX format.

3 to 7 digits in length

4 to 8 digits in length (1+Dialing)

There is no limit to the number of NXXs in the system, however the NXX digits must be in a certain range.

**N** = 2 to 9

**X** = 0 to 9

**X** = 0 to 9

## **SPN Digit Translation**

The SPN Network Translation locates the SPN dialed by the user in the Translation table and determines to which Route List the call is to be routed. Special Number is a digit sequence that is not like the NPA or NXX format.

The SPN may be any combination of digits and up to 19 digits in length. There is no limit to the number of SPNs programmed in the system.

## **Flexible “0” Routing**

When the system encounters an SPN, a check is made to determine if a “0” was dialed. If so, the system will wait for either the next one or two digits or the end of dialing indication. The system directs the call to the appropriate Route List Index and continues with processing the call.

The ESN Translation table allows for the following non-leftwise unique numbers (and their associated Route List) to be programmed:

0

00

01

011

## **Emergency Services Access**

Emergency Services Access (ESA) places customers in compliance with the Federal legislation requiring private 911 access. ESA provides 911 callers on a PBX the same level of 911 service that the majority of residences have in North America.

The software can be programmed so that the PSAP (Public Safety Answering Point) can be reached by dialing the ESDN (Emergency Service Access DN) or an access code followed by the ESDN.

## **Home NPA Digit Translation**

The purpose of the HNPA Network Translation table is to:

Locate the HNPA dialed by the user

Delete the HNPA

Locate the NXX dialed to determine the Route List to process the call

An HNPA can be three or four digits in length, however only one HNPA is allowed per customer.

## **Supplemental Digit Restriction**

Supplemental Digit Restriction (SDRR) blocks specific telephone numbers or a range of numbers in an NPA, NXX, or SPN. When SDRR is in effect, access to those numbers will be denied to all users.

An SDRR entry requires an SDRR block and there can be up to 1500 SDRR blocks per customer. There is one SDRR block per NPA, NXX, or SPN and up to 64 SDRR entries per block.

The following limitations exist for an SDRR entry on a Translation, depending on the length of the Translation:

NPA	1 to 7 digits
NXX	1 to 4 digits
SPN	1 to 10 digits

## **SDRR DENY entry**

An SDRR DENY entry denies the call if the digits in the entry match the digits dialed. If a call is blocked through SDRR DENY, the call is intercepted and the user will receive intercept treatment (NRES).

## **SDRR ALLOW entry**

The SDRR ALLOW entry allows a call to process if the digits in the entry match the digits dialed, even if there is a shorter version of the number that is denied. SDRR ALLOW entries only work in conjunction with other SDRR entries.

## **Supplemental Digit Recognition**

Supplemental Digit Recognition (SDRR) is to recognize Local DDD (LDDD) numbers or Local DID (LDID) numbers that reside at the local switch. When the numbers are recognized, a DID number will terminate at a station and a DDD number will terminate at the attendant. Route Lists will not be searched.

There are two types of Supplemental Digit Recognition Entries in an SDRR block:

SDRR LDDD

SDRR LDID

**SDRR LDDD** is a Local DDD number that usually terminates at a local attendant. When the number is recognized, the system will delete the entire number dialed, dial the Attendant DN, and keep the call internal.

**SDRR LDID** is a Local DID number that usually terminates at a local station. When the number is recognized, the system will ring the internal user and keep the call internal.

The following limitations exist for an SDRR entry on a Translation, depending on the length of the Translation:

NPA                1 to 7 digits

NXX               1 to 4 digits

SPN               1 to 10 digits

## **Incoming Trunk Group Exclusion**

Incoming Trunk Group Exclusion defines restricted dialing sequences following an NPA, NXX, or SPN when the call is incoming on a specific TIE route.

## **Supplemental Digit Restriction**

All numbers denied through Supplemental Digit Restriction are denied for all users when originating a call through BARS. Supplemental Digit Restriction is programmed in LD 90. The maximum number of DENY tables needs to be provisioned in LD 86 before a SDRR DENY entry can be made.

## **Incoming Trunk Group Exclusion**

The restricted dialing sequences with Incoming Trunk Group Exclusion are programmed in LD 90. In LD 86, the TIE routes that the exclusions apply to are referenced to Incoming Trunk Group Exclusion Indexes.

The maximum number of Incoming Trunk Exclusion tables must be programmed in LD 86 before any Incoming Trunk Group restrictions or tables can be created.