BRI on the DMS MMP

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Introduction

ISDN BRI functionality is available on the DMS MMP. This can be the ETSI, VN4 or Israeli variant. At present this can be achieved by two means.

LCME / SRU / RCO2

This service will use a BX27AA line card to provide a 'U' Loop ISDN interface via the Remote Concentrator & the PLGC. This will be transported to the customer using a direct copper pair connection or via an intermediate transmission device such as the Tellabs Martix DXX.

GPP

This service will use the V5.2 protocol to provide a 'U' Loop ISDN interface via the access node such as the Nortel UE3000. This enables concentration at the E1 level. The connection to the customer will be via a two-wire connection (T Reference) or via a TNR (NT1) for the S/T reference point

Software requirements

To Support the BRI protocol on the DMS 100E certain Software Order Codes (SOC) need to be provisioned. These are used to enable the Software on the DMS 100E. A full list of these can be obtained from the ISDN Capabilities Document¹. However a brief overview is shown below of what is available: -

DMS MMP BRI SOC Codes

SOC Code	SOC Name	Password	Functionality Supplied
		Required	
SULN0001	Subscriber Lines	N	BRI Perquisite
SULN0002	BRI Base	N	ETSI BRI P2MP with MOU1 services
			(SUB, DDI, MSN, CLIP, CLIR, UUS1)
SULN0004	ETSI BRI MoU2	N	MCID
	Bas Sv		
SULN0005	BRI Non-ETSI	N	PCOS
	Svces1		
SULN0006	BRI Non-ETSI	N	Emergency Line Services
	Svces2		
SULN0007	BRI Non-ETSI	Y	BRI Hunting (MLH, DLH, DNH)
	Svces 3		
SULN0008	ETSI BRI	N	Call Forwarding functionality
	Redirection		CFU (ETS 300-200), CFB (ETS 300-201)
			& CFNR (ETS 300-201)
SULN0009	ETSI BRI	N	Closed User Group
	Security		-
SULN0010	ETSI BRI	N	CCBS (Via ETSI V2) (ETS 300-357, ETS
	CallCompltn		300-358 & ETS 300-359)
SULN0011	ETSI BRI	Y	Advice of Charge (AOC-D & AOC-E)
	Information		
SULN0012	ETSI BRI Trunk	N	BRI Point to Point Functionality
SULN0013	ETSI BRI Multi	N	Call Waiting (ETS 300-356) & Call Hold
	Party		(ETS 300-139)
SULN0014	Numeris BRI	N	French BRI VN4 (Mou 1 Services only +
			CLIP, CLIR, AOC, SUB, DDI)
SULN0015	BRI 8 Term	Ν	8 Terminal support for BRI P2MP
	Support		
SULN0016	BRI Term	N	Terminal Portability (ETS 300-053 & ETS
	Portability		300-055)
SULN0017	BRI COLP-	Y	ETSI BRI Connect Line Presentation &
	COLR		Restriction
SULN0018	BRI 3 Party Call	N	Three Party Conference Calling

¹ See References

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SULN0019	Call Compltn No	Ν	CCNR Nodal or Via ETSI V2
	repl		
SULN0020	BRI Exp Call	N	Explicit Call Transfer (ECT
	Trnsfr		
SULN0021	Israeli BRI	Ν	Israeli BRI (Mou 1 services)

Not all functionality is password protected and the above list applies to the MMP15 Software load.

Basic Hardware requirements

LCME

The DMS 100E can support both the U and S/T interfaces via the LCME using line cards. These are the NTBX26 for the S/T interface that take up two positions in the LCME and the NTBX27 for the U interface which takes up one position. The Service Usually offered will be using the NTBX27 cards as most transmission equipment only supports the 2B1Q type of encoding at present to customer site. A TNR (NT1) also has to be provided on site to give the customer the S/T interface presentation required after termination at the DXX.

The TNR can be a CS telecom product. However further TNR's can be used if they conform to the correct specifications.

GPP

The DMS 100E supports the U interface via the GPP. This uses the standard GPP hardware to support BRI via the V5.2 protocol. An Access Node interface is required to connect at the V5.2 Level, which in this can be the Nortel Networks UE3000 product. This can support multiple V5.2 Interfaces if required. A TNR also has to be provided on site to give the customer the S/T interface presentation required after termination at the Access Node.

The BRI Functionality is not dependant on the Hardware used and no distinction is made within the DMS specifications and Documentation

Example Network Topology -



GPP



Basic Call Interworking – French Market.

The Basic call inter-workings presently in use on a French DMS are shown below. These are all supported via Nortel however certain functionalities and MOU services are not passed for all inter-workings

Note: BRI means both ETSI & VN4 BRI - P2P & P2MP versions.

(riginating Agent] erminating Agent
BRI	ETSI PRI
BRI	VN4 / VN6 PRI
BRI	SSUTR2
BRI	ETSI ISUP
BRI	V5.2
BRI	Centrex
BRI	Spirou
ETSI PRI	BRI
VN4 / VN6 PRI	BRI
SSUTR2	BRI
ETSI ISUP	BRI
V5.2	BRI
Centrex	BRI
Spirou	BRI

Also BRI to BRI Interworking is also supported regardless of the Hardware used.

Billing Information.

The AMA billing record for a BRI call should be of the same format of any other line call i.e. V5.2 or Centrex. However we will need to check this is the case. Also as a BRI line has the possibility of two simultaneous calls we need to have a mechanism in place to prove calls are billed correctly & stop queries on "duplicate" calls, where two calls are made at the same time.

We also need to test to see if the originating CLI can be captured in the AMA record if users want to be billed on a CLI or line basis. At present all calls made by a TBRI line will be billed to one number² even if more than one number is used on that line.

The DMS can append a module code 180^3 or 181 to AMA records to verify that if two simultaneous calls are made that they can be identified separately. We can also append an AMA module to indicate the bearer capability of the call such as speech, 3.1khz or 64k data. This can be in the form of a module code 030^4 or $070^5 / 071$.

Modules 070 & 071 are mutually exclusive, the 070 will be generated if a supplementary service such as Sub-address or a HLC or LLC IE is sent in the set-up message received by the DMS. The Same Tuple in Table AMAOPTS activates both modules 180 & 181.

It is important to note that if an incoming CLI for a BRI Point to Multi-Point line is screened correctly to match a number datafilled on the set this number will be placed in the AMA record in the ORIG OPEN DIGITS 1 field. Adding the Servord SPB option to each DN key with the Ten-digit number of the billing number required can change this.

It is important to note that if an incoming CLI for a BRI Point to Point line is screened correctly to match a number datafilled on the set this number will be placed in the AMA record in the ORIG_OPEN_DIGITS_1 field⁶. Adding the Servord SPB option to each DN key with the Seven-digit number of the billing number required can change this.

For More Information on AMA Billing please consult the DMS MMP AMA Billing Guide⁷

² Providing the SPB option is applied

³ Activated by the APPEND_ISDN_CKT_ID Tuple in Table AMAOPTS

⁴ Activated by the ISDN_ETSI_BS Tuple in Table AMAOPTS ⁵ Activated by the ISDNCIRCUIT Tuple in Table AMAOPTS and Table ISDNBILL.

⁶ This will be of 9 digits in Length

⁷ Reference 3

To verify the AMA records some examples are shown below: -

Base AMA record with Structure Code X0510

- *HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:00000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:00170000030C ORIG OPEN DIGITS 2:FFFFFFFFF ORIGINATING CHARGE INFO:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0804212C ELAPSED TIME:000000369C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5602567C MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C
- *HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:00000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:00170000030C ORIG OPEN DIGITS 2:FFFFFFFFF ORIGINATING CHARGE INFO:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0803057C ELAPSED TIME:000001540C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5602569C MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C

AMA Records for Module code 180 & 071

*HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:00000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:00170000030C ORIG OPEN DIGITS 2:FFFFFFFFF ORIGINATING CHARGE INF0:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0821361C ELAPSED TIME:000000074C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5603944C MODULE CODE:071C BEARER CAPABILITY:101C NETWORK INTERWORKING:3C RELEASE CAUSE INDICATOR:00016C MODULE CODE:180C ISDN CHANNEL ID:00004C

MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C

*HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:00000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:00170000030C ORIG OPEN DIGITS 2:FFFFFFFF ORIGINATING CHARGE INFO:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0821093C ELAPSED TIME:000000358C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5603948C MODULE CODE:071C BEARER CAPABILITY:102C NETWORK INTERWORKING:3C RELEASE CAUSE INDICATOR:00016C MODULE CODE:180C ISDN CHANNEL ID:00003C

MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C

AMA Records for Module code 030

- HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:00000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:0017000030C ORIG OPEN DIGITS 2:FFFFFFFFF ORIGINATING CHARGE INF0:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0841283C ELAPSED TIME:000000097C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5605830C MODULE CODE:071C BEARER CAPABILITY:101C NETWORK INTERWORKING:3C RELEASE CAUSE INDICATOR:00016C MODULE CODE:030C CONTEXT ID:016C TRANS SETTABLE:032C MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C
- *HEX ID:AA STRUCTURE CODE:40510C CALL CODE:006C SENSOR TYPE:036C SENSOR ID:0008140C REC OFFICE TYPE:036C REC OFFICE ID:0008140C DATE:00324C TIMING IND:01000C STUDY IND:0200000C CLD PTY OFF-HK:0C SERVICE OBSERVED:0C OPER ACTION:0C SERVICE FEATURE:000C SIG DIGITS NEXT FIELD:010C ORIG OPEN DIGITS 1:0017000030C ORIG OPEN DIGITS 2:FFFFFFFFF ORIGINATING CHARGE INFO:FFFF DOMESTIC/INTL INDICATOR:1C SIG DIGITS NEXT FIELD:010C TERM OPEN DIGITS 1:00170007203C TERM OPEN DIGITS 2:FFFFFFFFF CONNECT TIME:0843462C ELAPSED TIME:000000000C MODULE CODE:042C CALL RECORD SEQUENCE NUMBER:5606046C MODULE CODE:071C BEARER CAPABILITY:102C NETWORK INTERWORKING:3C RELEASE CAUSE INDICATOR:00016C MODULE CODE:030C CONTEXT ID:016C TRANS SETTABLE:003C MODULE CODE:120C CUSTOMER IDENTIFICATION:02001C MODULE CODE:000C

CLI Services

BRI supports the CLIP and CLIR supplementary services; However the DMS screens all CLI's sent from a BRI Interface to check their consistency. The screening behaviour is different depending on weather the access is P2P or P2MP.

Point to Multi-Point

The DMS will screen the incoming CLI in the CGN IE to see if it matches one of the MSN datafilled against the BRI Line. The incoming CLI can be of 4,7 or 9 digits in length. However the NPI and TON need to be set correctly to achieve a successful screening (E164, NATL). If screening is successful the CLI sent to the network will be that of the CGN in the incoming IE. This will be treated as the NDI. No NDS will be sent. If The CLI fails screening the CLI of the Key 1 DN will be sent to the network as the NDI

Point to Point

The DMS will screen the incoming CLI in the CGN IE to see if it matches one of the DN's⁸ datafilled against the BRI Line. The incoming CLI can only be 9 digits in length. However the NPI and TON need to be set correctly to achieve a successful screening (E164, NATL). If screening is successful the CLI sent to the network will be that of the CGN in the incoming IE. This will be treated as the NDS. The NDI will be generated from the Default DN provisioned by the Servord DDI option. If The CLI fails screening the CLI of the Default DN provisioned by the Servord DDI option will be sent to the network as the NDI, No NDS will be sent.

⁸ On P2P lines MSN is not supported and the use of DDI is required to allow CLI screening

Supplementary Service Capabilities

The DMS-100E implementation of VN4 BRI supports the following Supplementary services:

Calling Line Identification Presentation (CLIP) Calling Line Identification Restriction (CLIR) Direct Dialling In (DDI)⁹ Multiple Subscriber Number (MSN)¹⁰ Sub-addressing (SUB)

The DMS-100E implementation of ETSI BRI supports the following Supplementary services:

Calling Line Identification Presentation (CLIP) Calling Line Identification Restriction (CLIR) Direct Dialling In (DDI) Multiple Subscriber Number (MSN) Sub-addressing (SUB) Advice of Charge (AOC-D & AOC-E) Closed User Group Connected Line Identification Presentation Connected Line Identification Restriction Malicious Call Identification

⁹ DDI is only supported on P2P interfaces

¹⁰ MSN is only supported on P2MP interfaces

Limitations and Restrictions

The DMS implementation of ETSI BRI does not fully meet the ETSI standard but is compliant in all main area's. A Full statement of compliancy is provided in the relevant Nortel NIS document located in Helmsman.

The DMS implementation of VN4 BRI is extremely limited to basic call control and some MOU 1 services as stated previously. Further development of the VN4 BRI interface is planned to be available in MMP17. The full content of this development is yet to be confirmed.

Basic Datafill

The following basic datafill can be used to set up the BRI service. As the offering is enhanced this could be increased.

LCME BRI Point to Multi-Point Line

Provisioning the LTID

>SLT \$ VN4LT 100 ADD BRAFS Y N 60 Y VOICE VBD CMD **PVC VN4 0**¹¹ \$ COMMAND AS ENTERED:

Provisioning the DN

>NEW \$ 0170001234 ISDNKSET UPCRES 0 0 1 Y VN4LT 100 \$ COMMAND AS ENTERED:

Activating the LEN

The Status of the LEN in Table LNINV needs to be changed from HASU to Working before an LTID can be attached to it.

HOST 00 0 04 20 BX27AA NPDGP HASU N NL Y NIL

to HOST 00 0 04 20 BX27AA NPDGP **WORKING** N NL Y NIL

Attaching the LTID to a LEN

>SLT \$ VN4LT 100 ATT HOST 00 0 2 8 \$ COMMAND AS ENTERED: SLT \$ VN4LT 100 ATT HOST 00 0 2 8 \$

Now add extra line keys for the DN by adding the AFC feature to the DN key

>ADO \$ VN4LT 100 1 AFC 1 \$ COMMAND AS ENTERED: ADO \$ VN4LT 100 1 AFC 1 \$

¹¹ If ETSI BRI is required replace VN4 with ETSI

LCME BRI Point to Point Line

Provisioning the LTID

>SLT VN4LT 100 ADD BRAFS Y N 60 Y VOICE VBD CMD **PVC VN4 0**¹² PTOP COMMAND AS ENTERED:

Provisioning the DN

>NEW \$ 017005001 ISDNKSET UPCRES 0 0 1 Y VN4LT 100 \$ COMMAND AS ENTERED:

Activating the LEN

The Status of the LEN in Table LNINV needs to be changed from HASU to Working before an LTID can be attached to it.

HOST 00 0 04 20 BX27AA NPDGP HASU N NL Y NIL

to

HOST 00 0 04 20 BX27AA NPDGP WORKING N NL Y NIL

Attaching the LTID to a LEN

>SLT \$ VN4LT 100 ATT HOST 00 0 2 8 TEI 0 \$ COMMAND AS ENTERED:

Now add extra line keys for the DN by adding the AFC feature to the DN key

>ADO \$ VN4LT 100 1 AFC 1 \$ COMMAND AS ENTERED: ADO \$ VN4LT 100 1 AFC 1 \$

Now add the DDI and SPB options as required. ADO \$ VN4LT 100 1 DDI 0050010 1 SPB 0050010 \$ y

Data filling Supplementary Services

The following section describes how to datafill the available supplementary services.

Provisioning CLIP on a single BRI DN

To add CLIP to a VN4 BRI DN of 987654321, the SERVORD command in The following figure can be used. Example of CLIP Provisioning to a VN4 BRI DN >ADO \$ 9876543211 1 BRICLID\$

Created by Garry Clark

¹² If ETSI BRI is required replace VN4 with ETSI

COMMAND AS ENTERED: ADO \$ 9876543211 1 BRICLID\$ ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT

Clip can also be provided on a customer group Basis by adding the CLID option in Table CUSTNTWK (as OFFNET) or by on an Office basis by setting the office parameter BRI_CLIP_GENERALLY_AVAILABLE in Table ISDNVAR to ON.

The CLIP per-call service is not available on BRI P2MP lines

Provisioning Permanent Mode CLIR on BRI DNs

To add CLIR to a VN4 BRI DN of 987654321, the SERVORD command in The following figure can be used. Example of CLIR Provisioning to a VN4 BRI DN >ADO \$ 9876543211 1 SUPPRESS PUBLIC Y N \$ \$ \$ COMMAND AS ENTERED: ADO \$ 9876543211 1 SUPPRESS PUBLIC Y N \$ \$ \$ ENTER Y TO CONFIRM, N TO REJECT OR E TO EDIT

For a BRI P2MP line the suppress option needs to be provisioned against every DN on the BRI set that is required to have the CLI restricted. CLIR on a per-call basis for BRI P2MP lines is undertaken by the user setting the PI indicator in the incoming CGN IE to restricted. For a BRI P2P line the suppress option needs only to be provisioned against the KEY 1 DN of the LTID. CLIR on a per-call basis for BRI P2P lines is undertaken by the user setting the PI indicator in the incoming CGN IE to restricted.

DDI Service.

The DDI service can be applied to Point-to-Point configuration lines only and is used in conjunction with the economical usage of DN's. The DMS implementation provides a DDI root number which is used at the Network Number (NDI) when the CLI is screened by the DMS, This number does not include the AFN of the number e.g. 0170050010 is provisioned as 0050010. The DMS adds the AFN automatically upon CLI screening.

ADO \$ ETSIBRI 1 DDI 1 0050010 \$ Y

Advice Of Charge.

The AOC supplementary service is only available to ETSI BRI lines¹³ and provides the AOC-D (During) and AOC-E (end) functionality. This service is needs the DMS to be configured to support AOC in Universal Translations¹⁴, the Peripheral and the BRI Line. The DMS Peripheral (PLGC or GPP) needs to have the option METER applied in Table LTCINV and then a Warm Swact of the XPM performed.

¹³ VN4 BRI should be available in MMP17

¹⁴ Not Covered in this Document

Example of Table LTCINV

PLGC 0 LTEI 0 5 1 A 4 6X02UC OGI15AY (POTS POTSEX) (KEYSET KSETEX) (RMM_TERM RSMEX) \$ (0 31 17 0) (0 31 17 1) (0 31 17 2) (0 31 17 3) (0 31 17 4) (0 31 17 5) (0 31 17 6) (0 31 17 7) (0 31 17 8) (0 31 17 9) (0 31 17 10) (0 31 17 11) (0 31 17 12) (0 31 17 13) (0 31 17 14) (0 31 17 15) \$ (UTR15) (RAM6X69) (CMR13 CMRJ10A) (NT6X44EA) (ISP 16) (NT6X28) \$ TONFRMF MX77AA MX77AA 0 UPFWNS01 (METER) \$ 6X40FB N

The BRI LTID needs to be configured via Servord with the AOC option as below.

ADO \$ ISDNBRI 1 (1 AOC Y Y Y N 1 CHARGING N) \$ Y

The datafill prompts are similar to that of PRI.

ADO > \$ DN_OR_LEN: ISDNBRI 1 **OPTKEY:** 1 **OPTION:** AOC > AOCD: Y >AOCE: Y > AOCREL: Y > AOCHGOV: N > ODIDX: 1 **Originating Discount Index** >UNITS: CHARGING Charging or Currency > BNS: N Set to N for Charging and Y for Currency (per second charge)

Created by Garry Clark

> OPTKEY: \$

Closed User Groups

To add the closed user group functionality to a BRI line the lines that will be grouped need to be listed on provisioning. For example: -

ADO \$ ISDNBRI 1 1 CUG 1 \$ \$ Y

- Where Key 1 is listed only. If a \$ is used all Keys are selected

User to User Signalling

This functionality has been introduced in MMP15 for ETSI BRI lines only. The Implicit and Explicit services have been allowed. Implicit is selected when the UUS service is requested at call set-up and the Explicit service is select via the national facility ID during call progression. UUS needs to be applied to all keys on the interface if required on that line.

ADO \$ ISDNBRI 1 1 UUS1 Y Y \$ Y

Priority Class of Service

This functionality is available using the ELN (Essential Line) Servord option. This enables BRI lines when the switch ESP (ESP CI Command) functionality is active to have priority to make calls in the time of switch emergencies. The Level 2 PCOS functionality is available when the NETPROT (NETPROT CI Command) switch functionality is activated and the line has ELN applied. This allows only essential lines to make external calls to the DMS Office.

ADO \$ ISDNBRI 1 1 ELN \$ Y

Provisioning Hunt-groups¹⁵

In Many applications the BRI Point-to-Point interface is used to replace the need for PRI trunks and requires the ability to provide call distribution or hunting over multiple interfaces. The DMS can support a Varity of Hunt-group functionality, however the main types used are MLH (Multi-Line Hunting), DLH (Distributed Line Hunting) & DNH (Directory Number Hunting). Each is provisioned in a similar manner using Servord and is described below.

A MLH group will attempt to terminate a call on the primary Line at all times and then on subsequent lines if it is busy, A DLH group will terminate calls in evenly across the members in a clockwise hunting manner, While a DNH group will pick the number called as its place to terminate and then each number in turn until it is successful.

¹⁵ SOC Code SULN0007 needs to be in the ON state for incoming calls to be delivered

Servord Datafill

CI:	
>servord	
SO:	
>est \$	
GROUPTYPE	
>MLH	Enter Group Type Here
PILOT_DN:	
>0170050010	
LCC:	
>isdnkset	
GROUP:	
>descartes	
SUBGRP:	
>0	
NCOS:	
>0	
KEY:	
>1	
RINGING:	
>y	
PILOT_LEN:	
>vn4bri 15	
MEM_LEN:	
>\$	Add Additional Group Members Here (LEN & KEY / DN, LEN & KEY)
OPTION:	
>\$	It is best to add all line options separately – but add group options here
GROUPSIZE:	
>5	
COMMAND A	AS ENTERED:
EST NOW 19	3 PM DLH 0170050010 ISDNKSET DESCARTES 0 0 1 Y VN4BRI 15
\$\$5	
ENTER Y TO	CONFIRM, N TO REJECT OR E TO EDIT

CLI Screening with Special Arrangement

As from MMP13 the DMS supports the "Special Arrangement" CLI screening functionality for ETSI BRI lines. This enables the incoming CGN IE to be treated as the Presentation Number (NDS in France). This is actioned by applying the NOSCRN & SCRNPN options in Table LTDEF to the BRI LTID.

However at present this functionality is limited to only ETSI ISUP V2, ETSI PRI, QSIG and ETSI BRI as terminating agents. This means that within France this functionality is not applicable.

An Example of the Data fill is shown below: -

ISDNBRI 15 B BRAFS (VOICE) (VBD) (CMD) (PVC ETSI 0) (DEFLTERM) (PTOP) (NOSCRN) (SCRNPN) \$

V5.2 BRI provisioning.

The provision of V5.2 BRI lines is the done in the same manner as BRI on the LCME. The only difference is the Datafill with Table LNINV, where the card-code is changed from BX27AA to V5BRI & the PADGRP to GPPLN.

For Example:-

PA04 00 0 01 00 V5BRI GPPLN WORKING N NL Y NIL

Also for V5.2 BRI there are no ISG groups provisioned for the GPP as the EISP (NTBX01) within the GPP handles the D Channel handling.

Table DCHINV

Each peripheral being used to support the ISDN functionality must have a 'D' channel handler card (DCH) loaded correctly. These are defined in Table DCHINV are the NTBX02 cards. Normally these are located in slots 17 & 19 in the PLGCOi.

DCHNO PMTYPE PMNO DCHPEC LOAD PORT

0 PLGC 0 BX02BA EDH15AY 19 1 PLGC 0 BX02BA EDH15AY 17

One DCH should always be left as a spare for redundancy and not provisioned in Table ISGDEF.

Table ISGDEF

An ISG can be defined per D channel handler assigned on each peripheral. Therefore for a PLGC with two DCH cards, two ISG's can be defined.

ISGNO PMTYPE PMNO SERVICE CHNLTAB

0 PLGC 0 (BRA) (PD) \$ (0 RESERVED) (1 BRA) (2 BRA) (3 BRA) (4 BRA) (5 BRA) (6 BRA) (7 BRA) (8 BRA) (9 BRA) (10 BRA) (11 BRA) (12 BRA) (13 BRA) (14 BRA) (15 BRA) (16 BRA) (17 BRA) (18 BRA)

(19 BRA) (20 BRA) (21 BRA) (22 BRA) (23 BRA) (24 BRA) (25 BRA)

(26 BRA) (27 BRA) (28 BRA) (29 BRA) (30 BD) (31 BD) \$

TABLE ISDNVAR

Q931 ABN LOG OFF L3_DISCONNECT_MSG_RCVD ON L3_DISCONNECT_MSG_TRANS ON L3_RELEASE_MSG_RCVD ON L3 RELEASE MSG TRANS ON L3 RELEASE COMPL MSG RCVD ON L3_RELEASE_COMPL_MSG_TRANS ON L3_STATUS_MSG_RCVD ON L3_STATUS_MSG_TRANS ON L3_PROGRESS_MSG_TRANS ON L3_MSG_RCVD_BAD_LENGTH ON L3_MSG_RCVD_INVALID_INFO ON L3_MSG_RCVD_INVALID_CR_VALUE ON L3_MSG_RCVD_INVALID_CR_FLAG ON PKT_ABN_LOG OFF L3 RESTART REQ TRANS ON L3_RESTART_REQ_RCVD ON L3 RESET REQ TRANS ON L3_RESET_REQ_RCVD ON L3_CLEAR_REQ_TRANS ON L3_CLEAR_REQ_RCVD ON L3_DIAG_PKT_TRANS ON L3_DIAG_PKT_RCVD ON L3_SVC_DSRPT_CTRL ON LAPD_ABN_LOG ON TEI_SUBSCRIPTION_LIMITS_EXCD ON TEI_NO_RESPONSE ON TEI ROUTINE TEST OFF TEI_MULTIPLE_RESPONSE ON TEI_IDENTITY_VERIFY_MSG ON TEI_UNSOLICITED_RESPONSE ON TEI_NOT_ASSIGNED ON L2_DM_FRAME_RCVD ON L2_DM_FRAME_SENT ON L2 FRAME RCVD CNTRL UNDEF ON L2_FRAME_RCVD_INVALID_INFO ON L2_FRAME_RCVD_INVAL_SEQ_NUM ON L2_FRAME_RCVD_EXCD_INFO ON L2_FRAME_RCVD_UNEXPECTED ON L2 FRMR FRAME RCVD ON L2_PROPER_RESPONSE_NOT_RCVD ON

Created by Garry Clark

L2_INVALID_FRAME_RCVD ON LAPD16_ABN_LOG OFF LAPB ABN LOG OFF SDT_SUBSCRIPTION_LIMIT_EXCD ON L3_SVC_DSRPT_THLD 8 MAX_ASYNC_ISDN_DIAGS 5 CND BRI OFFICE ON TMEAS 0 DEFOML 0 AUTOSPID OFF RND_BRI_OFFICE ON ECHO_STAT_BILL_PARM OFF BRI_CLIP_GENERALLY_AVAILABLE ON BRI_PROVCGS_GENERALLY_AVAILABLE ON BRI PROVCDS GENERALLY AVAILABLE ON BRI_PROVLLC_GENERALLY_AVAILABLE ON BRI_PROVHLC_GENERALLY_AVAILABLE ON BRI_PREFER_NATIONAL_CGN_DISPLAY ON BRI_COLP_GENERALLY_AVAILABLE ON BRI_PREFER_NATIONAL_CNN_DISPLAY ON CFNR_WHEN_NO_TERMINAL_RESP ON BRI_TEMP_COLR_GEN_AVAIL ON RESTRICT

TABLE: ISDNPROT

PROTVAR PVCAPPL APPLDATA

ETSIPRI NETTIMER PRITIMER (T316 120) (T317 115) \$

TABLE: ISDNPARM

NAME MSGTYPE MSGDIR DFLTACT PARMACT

PRIMAP SETUP BOTH MAP (CGS ATP) (LLC ATP) (HLC ATP) (CDS ATP) \$ VN4MAP SETUP BOTH MAP (CGS ATP) (LLC ATP) (HLC ATP) (CDS ATP) \$

TABLE: ISDNBILL

DEFAULT ¹⁶(CGS) (CDS) (HLC) (LLC) \$ BRI (CGS) (CDS) (HLC) (LLC) \$ BOTTOM

¹⁶ The DEFAULT Tuple applies to all lines without the ISDNBILL option assigned

Maintenance Commands required for line Activation

To bring a LCME BRI line into service commands need to be actioned within the MAPCI level, these are listed and shown below.

ISG

Each BRI line is linked to an associated ISG, The ISG has to be in-service for the line to function. This is achieved by posting the associated PLGC or RCO2 in the PM level i.e. mapci;mtc;pm;post plgc 0

The ISG then needs to be posted within the PM level. This is achieved by using the ISG command (18) from the PM menu.

Within the ISG level now post the available ISG's i.e. post 0, (as shown below)

СМ	MS	IOD	Net	PM C	CCS L	ns T	rks]	Ext	APPL	
	•	•								
ISG			SysB	ManB	OffL	CBsy	ISTb	o In	Sv	
0 Quit			PM	0	0	0	0	0	97	
2 Post_			PLGC		0 0	0	0	0	1	
3										
4			PLGC	0 InSv	Links_C	DOS: C	Side	0 , PS	Side 0	
5			Unit0:	Act In	Sv					
6			Unit1: 1	nact InS	Sv					
7 Bsy_										
8 RTS_	_	ISG		11	1111111	1	2222	2222	22	33
9 Offl_			1234567	89 01	2345678	39	0123	34567	'89	01
10			0000	0000	00000	0000	000	000	00000	000
11										
12 Next			ISG 0I	OCH 0	InSv PL	GC 0	port 1	19		
13										
14 Quer	yCH_	-	post 0							
15 Cont										
16 Loop	bk_									
17										
18										
GCLA	RK									
Time 13	3:45	>								

Then by using the QueryCH command find the associated ISG for the new line, all available ISG's will need to be checked. The amount of ISG's is defined in Table ISGDEF as shown previously.

The specified ISG will now need to be brought into service using the bsy 0 and rts 0 commands where 0 is the ISG number associated with the LEN.

Monitoring BRI Call Processing in MAPCI

As a BRI line has the possibility of having two simultaneous calls in progress additional information needs to be entered within the LTP level to monitor the line correctly. To Monitor the BRI line the LEN attached to the LTID must be used along with the required B channel to be monitored. If both B channels are to be monitored then the first B channel needs to remain visible on the screen by using the HOLD command from the LTP MENU.

CM MS IOD Net PM CCS Lns Trks Ext APPL ••• LTP 0 Quit **BUSYQ** POST DELQ PREFIX 2 Post_ LEN HOST 00 0 04 20 3 LCC PTY RNG STAFSLTA TE RESULT DN 017 005 002 CPB 017 000 7159 4 ISDN B2 5 Bsy 6 RTS 7 Diag H1 017 005 001 CPB UP1TRATDDM12 133 8 9 AlmStat 10 CktLoc 11 Hold 12 Next 13 14 15 FullDn 16 Prefix 17 LCO_ 18 Level_ **GCLARK** Time 12:30 >post 1 host 0 0 4 20 b2 isdn

References

- DMS ISDN Capabilities Version 7
 DMS MMP Base Product Description
- 3. DMS MMP AMA Guide Version 1

Glossary of Terms

CGN	Calling Number
CDN	Called Number
BRI	Basic Rate Interface
IE	Information Element
PI	Presentation Indicator
TON	Type Of Number
NPI	Numbering Plan Indicator
LLC	Low Layer Capability
HLC	High Layer Capability
ETSI	European Telecommunications Standards Institute