BRI ISDN Interface

bintec Dm729-I

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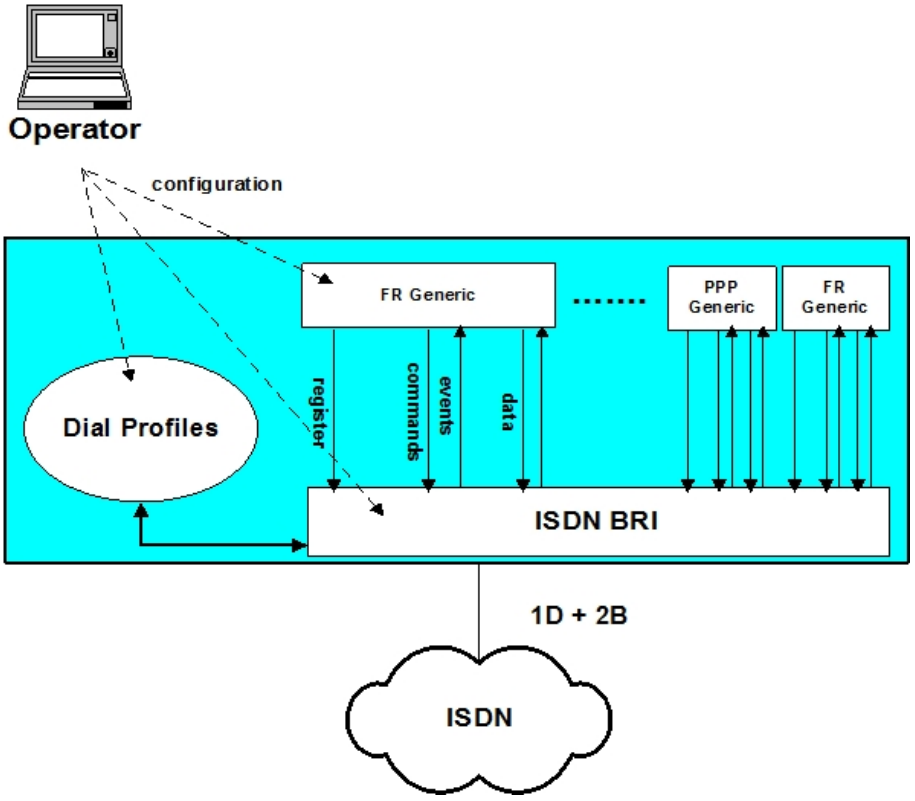
bintec Dm772-I Common Configurations for Interfaces

Chapter 1 Configuration

1.1 Introduction

Our **routers** BRI ISDN interface let you manage an ISDN basic interface, which includes a D channel and two B channels. Channel D is generally used to send signaling messages for call establishment and release. The B channels are used for data transmission of other protocols. Our routers support switched or permanent ISDN and adapt to the majority of the various existing ISDN standards. Additionally you can configure a series of parameters to determine the behavior of the interface so these routers can be used in almost any scenario or place worldwide.

The BRI ISDN interface ensures access to ISDN for data transmission over B channels, supporting various protocols in these. This interface can be viewed as an intermediate between the ISDN and other user interfaces requesting these services. The system's internal architecture is shown in the following figure:



You can configure as many user interfaces as required (FR Generic or PPP Generic) over the BRI ISDN interface. On startup, each user interface is registered over the BRI ISDN base interface. In the register information the BRI ISDN is informed which channel B is required and a dial profile name is provided. The BRI ISDN uses this profile when executing outgoing calls made by the user interface and also to filter the incoming calls consequently being able to assign these to the corresponding interface.

When a user interface wishes to establish a link, it prompts the BRI ISDN base interface through an internal command. The BRI ISDN on having a link available (e.g. when a call has been established) informs the user interface through the corresponding event. Once the link has been established, data exchange can commence.

Logically, if various user interfaces, be they FR Generic or PPP Generic, compete for the same B channel, the BRI ISDN interface assigns the link to the first user requesting it with the other user having to wait until this resource is free.

When operating with an ISDN where the two B channels are permanent, call establishment is not required and nor does the user interface request link activation through a command. This is automatically produced when registering. Consequently, only two user interfaces can achieve link activation.

In the sections following this introduction you will find the details to configure the BRI ISDN. However, an operator who wishes to configure a router to manage Frame Relay or PPP links over ISDN, must also be able to handle both dial profile configuration and FR Generic and PPP Generic user interface configuration.

1.2 BRI ISDN Configuration Commands

The BRI ISDN interface configuration commands are described in this section. Among other things, these commands allow interface behavior to adapt to the Network it is connected to. It is possible for example to select the ISDN standard.

There are certain commands that are common for all the device's interfaces. These commands are described in the manual on configuring common interfaces (bintec Dm772-I Common Configurations for Interfaces).

The available commands are summarized in the below table:

Command	Function
? (HELP)	Displays the commands or the available options within a command.
JOIN-B1+B2	Associates the two B channels so they form a single pipeline at 128 Kbps.
LEAVE -B1+B2	Separates the two B channels that were previously associated through the **join-b1+b2** command.
LIST	Displays the interface configuration information.
MTU	Configures the maximum frame length that can be sent over the interface.
SET	Configures the value of the different interface parameters depending on the required option.
EXIT	Returns to the *Config>* configuration prompt.

Accessing the BRI ISDN Configuration environment

All the configuration commands must be entered at the BRI ISDN interface configuration prompt (BRI config>). To access this prompt:

(1) Within the configuration prompt (Config>), display the list of interfaces and their associated interface number by running **list devices**.

(2) Run the **network** command followed by the interface name.

Example:

```
Config>LIST DEVICES

Interface       Con    Type of interface              CSR     CSR2  int
 ethernet0/0     LAN1   Fast Ethernet interface   fa200e00            27
 serial0/0       WAN1   X25                       fa200a00 fa203c00   5e
 serial0/1       WAN2   X25                       fa200a20 fa203d00   5d
 serial0/2       WAN3   X25                       fa200a60 fa203f00   5b
 bri0/0          ISDN1  ISDN Basic Rate Int       fa200a40 fa203e00   5c
 x25-node        ---    Router->Node                     0             0
 ppp1            ---    Generic PPP                      0             0
Config>NETWORK BRI0/0

-- BRI ISDN Configuration --
bri0/0 BRI config>
```

1.2.1 ? (HELP)

Use the **?** (HELP) command to list all the valid commands at the level where the router is configured. This command can also be used after a specific command to list the available options.

Syntax:

```
bri0/0 BRI config>?
```

Example:

```
bri0/0 BRI config>?
  join-b1+b2     Associates B channels in a single pipeline at 128 Kbps
  leave-b1+b2    Separates B channels that were previously associated
  list           Displays the interface configuration information
  mtu            Sets the interface maximum transmit unit
  set            Configures interface parameters
  exit
bri0/0 BRI config>
```

1.2.2 JOIN-B1+B2

Associates the two B channels so they form a single pipeline at 128 Kbps. To ensure this feature is fully operational, the Network must be able to support it.

When the B1 and B2 are grouped, and over either of the two channels a user interface is registered (Generic FR or Generic PPP), really the interface is assigned to the group of channels making up the group. Consequently the user interface has an available bandwidth of 128 Kbps. Additionally, while the two channels are grouped, only one user interface can be registered over them.

Important

B channels can only be associated if the ISDN network the router is using supports this. The two channels must be configured as permanent.

Syntax:

```
bri0/0 BRI config>join-b1+b2
```

Example:

```
bri0/0 BRI config>join-b1+b2
bri0/0 BRI config>
```

1.2.3 LEAVE-B1+B2

This separates the two B channels previously associated through the **join-B1+B2** command. I.e. after executing this command, you once more have two B channels at 64 Kbps that are individually managed.

Syntax:

```
bri0/0 BRI config>leave-b1+b2
```

Example:

```
bri0/0 BRI config>leave-b1+b2
bri0/0 BRI config>
```

1.2.4 LIST

Run **list** to view the interface configuration. The configuration of the interface's general parameters appears with the configuration of each independent channel.

Syntax:

```
bri0/0 BRI config>list
```

Example:

```
bri0/0 BRI config>list

ISDN Standard            : EURO-ISDN
Type of number           : Unknown
Numbering Plan Identific : Unknown
Sending Complete         : Enabled
Alerting incoming calls  : Disabled
Calling number presentat : Allowed
TEI Negotiation option   : First Call
Supervision interval     : 10
Supervision fails to down: 3
Local address            :
SPID Value for B1        :
SPID Value for B2        :
Maximum frame length     : 2048

             B1   B2
---------- ---- ----
MTU        2048 2048
Type       SW   PERM
```

```
B1+B2

Bri0/0 BRI config>
```

1.2.5 MTU

Configures the maximum frame length supported by the interface. Permitted values are 1024, 2048 and 4096 bytes. Default is 2048 bytes.

Syntax:

```
bri0/0 BRI config>mtu <maximum_frame_length>
```

Example:

```
bri0/0 BRI config>mtu 4096
```

1.2.6 SET

Run **set** to configure the different parameters: global (complete interface) and those for a determined circuit.

Syntax:

```
bri0/0 BRI config>set <option, parameter, value>
```

Example:

```
bri0/0 BRI config>set ?
  circuit    Configures the own parameters for each circuit
  global     Configures the interface global parameters
```

1.2.6.1 SET CIRCUIT

Configured the individual parameters for each circuit.

Syntax:

```
bri0/0 BRI config>set circuit ?
  max-frame-length    Configures the maximum frame length over each channel
  type                Configures the connection type over each channel
```

1.2.6.1.1 SET CIRCUIT MAX-FRAME-LENGTH

Configures the maximum frame length permitted in the specified channel. Possible values are 1024, 2048 and 4096 bytes. Default is 2048 bytes.

Syntax:

```
bri0/0 BRI config> set circuit max-frame-length <circuit_number, max_frame_length>
```

Example:

```
bri0/0 BRI config>set circuit max-frame-length 2 2048
```

Note

The maximum frame length associated to a channel cannot exceed the value of that configured for the interface in its group.

1.2.6.1.2 SET CIRCUIT TYPE

Configures the connection type established over each channel: permanent or switched.

Syntax:

```
bri0/0 BRI config>set circuit type <circuit_type, circuit_number>
```

The two possible options are permanent (**permanent**) or switched (**switched**).

```
bri0/0 BRI config>set circuit type ?
  permanent    Permanent connection type (Not Q.931 signaling)
```

```
  switched     Switched connection type
```

Example:

```
bri0/0 BRI config>set circuit type switched 1
```

or

```
bri0/0 BRI config>set circuit type permanent 2
```

1.2.6.2 SET GLOBAL

Configures the interface global parameters.

Syntax:

```
bri0/0 BRI config>set global ?
  alerting            Respond to SETUP messages with an ALERTING message
  discpi-release      Do not release call on disconnect with progress indication
  emulate             Configures Q.931 emulation side
  local-address       Configures the local number for the interface
  mgcp                MGCP configuration
  number_type         Configures the number type field used in outgoing calls
  plan-type           Configures the plan type field used in outgoing calls
  presentation        Configures the presentation indicator in outgoing calls
  sending-complete    Enable or disable sending complete IE in outgoing calls
  supervision         Configures supervision line options
  tei-negotiation     Configures TEI negotiation option
```

1.2.6.2.1 SET GLOBAL ALERTING ENABLE

When this option is enabled, the devices respond to the Q.931 SETUP messages coming from the Network with an ALERTING message. Consequently this only affects incoming calls. Default is disabled.

Syntax:

```
bri0/0 BRI config>set global alerting ?
  disable    Does not send ALERTING to SETUP incoming
  enable     Sends ALERTING to SETUP incoming
  in-band        Alerting tone is received as in-band audio
  out-of-band    Alerting tone generated by the equipment
```

Example:

```
bri0/0 BRI config>set global alerting enable
```

or

```
bri0/0 BRI config>set global alerting disable
```

1.2.6.2.2 SET GLOBAL ALERTING IN-BAND

When this option is enabled, the device opens voice channel B when the ALTERTING indication is received, whether the PROGRESS-INDICATION has been received or not. This command must be configured in ISDN lines that don't send PROGRESS-INDICATION.

This only applies to outgoing voice calls.

To disable this behavior, run **set global altering out-of-band**.

Syntax:

```
bri0/0 BRI config>set global alerting ?
  disable        Does not send ALERTING to SETUP incoming
  enable         Sends ALERTING to SETUP incoming
  in-band        Alerting tone is received as in-band audio
  out-of-band    Alerting tone generated by the equipment
```

Example:

```
bri0/0 BRI config>set global alerting in-band
```

or

```
bri0/0 BRI config>set global alerting out-of-band
```

1.2.6.2.3 SET GLOBAL DISCPI-RELASE ENABLE

When this option is enabled, the device always sends a RELEASE on receiving a DISCONNECT with an in-band audio indication. This option is disabled by default. In outgoing voice calls, if a DISCONNECT is received with in-band audio and the release cause is distinct to Busy (17), the call is maintained in order to reproduce the audio indicated.

Syntax:

```
bri0/0 BRI config> set global discpi-release ?
  enable     Release call on disconnect with progress indication
  disable    Do not release call on disconnect with progress indication
```

Example:

```
bri0/0 BRI config>set global discpi-release enable
```

or

```
bri0/0 BRI config>set global discpi-release disable
```

1.2.6.2.4 SET GLOBAL EMULATE

Configures the interface operating mode. This can be either network mode (NT) or user mode (TE). Not all the interfaces allow you to configure the operating mode. If the operating mode is not configurable, this command is not available and the interface always operates in user mode (TE).

When operating in NT mode, power is not provided therefore it is not possible to connect devices which need powering over the ISDN interface.

Syntax:

```
bri0/0 BRI config>set global emulate ?
  network    Bri interface emulates network side
  user       Bri interface emulates user side
```

Example:

```
bri0/0 BRI config>set global emulate network
```

or

```
bri0/0 BRI config>set global emulate user
```

1.2.6.2.5 SET GLOBAL LOCAL-ADDRESS

Configures the local number for the interface. This number is used as the calling number in those outgoing calls executed by the user interfaces (Generic FR or Generic PPP) whose dial profile does not have the local number configured. When the profile does have the local number configured, this is used as the calling number.

Note

Although it is not mandatory to configure this parameter, it is advisable to so do when an interface can execute outgoing calls and its associated profile does not have the local number configured.

Syntax:

```
bri0/0 BRI config>set global local-address <ISDN_number>
```

Example:

```
bri0/0 BRI config>set global local-address 384200
```

1.2.6.2.6 SET GLOBAL MGCP BACKHAUL

Enables the MGCP mode in the interface. This mode means that if the MGCP application is executing, it registers this interface as two *endpoints* in the device, one for each B channel. Under these circumstances, the Q.931 signaling is sent to the MGCP server through the backhaul protocol over TCP. The MGCP commands are available for all the device's BRI interfaces.

To disable this configuration, run **no set global mgcp backhaul**.

Syntax:

```
bri2/1 BRI config>set global mgcp ?
  backhaul        Assign this interface to MGCP with backhaul signaling
  endpoint-id    MGCP endpoint identifier for this interface
```

Example:

```
bri2/1 BRI config>set global mgcp backhaul
```

1.2.6.2.7 SET GLOBAL MGCP ENDPOINT-ID

The result of this command is to configure the initial part of the MGCP *endpoint* names used to register the interface's B1 and B2 channels in the MGCP server; to identify one B channel from the other the characters "/1" ó "/2" are automatically added to the end of the name. To register the endpoints, the BACKHAUL option must be enabled. By default, the denominations BRI/S0/SUX/PY/1 and BRI/S0/SUX/PY/2 are used for a briX/Y interface, which is what the *Cisco Unified Communication Manager* (CUCM) Call Agent expects: e.g. for the bri2/1 interface, the identifier to configure after ignoring the last two characters is "BRI/S0/SU2/P1"; this corresponds to the default value so does not need to be configured. You only need to configure this identifier if the names of the two endpoints do not correspond to said default values.

To disable this configuration, run **no set global mgcp endpoint-id**.

Syntax:

```
bri2/1 BRI config>set global mgcp endpoint-id <id>
```

Example:

```
bri2/1 BRI config>set global mgcp endpoint-id BRI/SLOT2/PORT1
```

1.2.6.2.8 SET GLOBAL NUMBER-TYPE

Configures the *number type* field encoded in the information elements calling number and called number used by the router in outgoing calls. Default is unknown.

Syntax:

```
bri0/0 BRI config>set global number_type <number_type>
bri0/0 BRI config>set global number_type ?
  abbreviated
  international
  national
  specific
  subscriber
  unknown
```

Example:

```
bri0/0 BRI config>set global number_type national
```

1.2.6.2.9 SET GLOBAL PLAN-TYPE

Configures the *plan type* field encoded in the information elements calling number and called number used by the router in outgoing calls. Default is unknown.

Syntax:

```
bri0/0 BRI config>set global plan-type <plan_type>
bri0/0 BRI config>set global plan-type ?
  data
  isdn-telephony
  national
  private
  telex
  unknown
```

Example:

```
bri0/0 BRI config>set global plan-type isdn-telephony
```

1.2.6.2.10 SET GLOBAL PRESENTATION

Configures the *presentation indicator* field encoded in the information elements calling number and called number used by the router in outgoing calls. Default is allowed.

Syntax:

```
bri0/0 BRI config>set global presentation <presentation_indicator>
bri0/0 BRI config>set global presentation ?
  allowed       presentation indicator allowed in outgoing calls
  restricted    presentation indicator restricted in outgoing calls
```

Example:

```
bri0/0 BRI config>set global presentation restricted
```

1.2.6.2.11 SET GLOBAL SENDING-COMPLETE

When this option is enabled, the device includes the *sending complete* information element in the outgoing calls' Q.931 SETUP messages. Default is enabled.

Warning

Our routers do not support overlap sending, independently of whether the sending complete information element is included or not.

Syntax:

```
bri0/0 BRI config>set global sending-complete <enable or disable>
```

```
bri0/0 BRI config>set global sending-complete ?
  disable    Does not Include sending complete IE in outgoing calls
  enable     Includes sending complete IE in outgoing calls
```

Example:

```
bri0/0 BRI config>set global sending-complete enable
```

or

```
bri0/0 BRI config>set global sending-complete disable
```

1.2.6.2.12 SET GLOBAL SUPERVISION

Configures the interface supervision. By supervision, we mean knowing if this is operative or not regarding carrying out calls or establishing links. So all the logical layers implicated in the establishment of communications are operative, they must be active. For permanent communications, you need the physical layer to be operative and for switched (calls), both the physical layer and the link layer (LAPD) must be operative.

The BRI is active (UP) if it's operative and DOWN if not.

Default is supervision deactivated and the BRI interface permanently active.

Syntax:

```
bri2/0 BRI config>set global supervision ?
  fails-number    Number of failed activation trials to set down this ifc
  interval        How ofen supervision is done in seconds when ifc is up
```

SET GLOBAL SUPERVISION FAILS-NUMBER

If during a supervision task, a check shows that a link is not operative, it tries to reactivate it a configurable number of times. This value is configured through this parameter. Once this number of retries has been surpassed, the interface is considered to be non operative and it remains in a DOWN state. This admits values between 1 and 5.

Default is 3.

Example:

```
bri2/0 BRI config>set global supervision fails-number 2
bri2/0 BRI config>
```

SET GLOBAL SUPERVISION INTERVAL

Configures the interval used to check if the interface is operative. This check is carried out when the interface is active (UP). This is configured in seconds and admits values between 0 and 65535. A 0 value deactivates the supervision and the BRI interface is always active (UP).

Default is supervision interval 0.

Example:

```
bri2/0 BRI config>set global supervision interval 60
bri2/0 BRI config>
```

1.2.6.2.13 SET GLOBAL TEI-NEGOTIATION

Configures the mode of obtaining the TEI from the link layer in BRI interfaces, which behave as TE. The device can be configured to begin TEI negotiation on its own initiative as soon as it is connected and powered up. Otherwise, the TEI negotiation only begins when it's necessary to carry out calls. You can also configure this to use fixed TEI, without any negotiation in which case the value used is 0.

Note

So that the TEI negotiation begins, the router forces the physical level activation. Therefore, a device configured to negotiate TEI on startup permanently has the physical level activated unless the Network subsequently deactivates it.

Syntax:

```
bri0/0 BRI config>set global tei-negotiation <option>
bri0/0 BRI config>set global tei-negotiation ?
  first-call    TEI negotiation begins at first call
  power-up      TEI negotiation begins at statup or physical activation
  none-tei-0    There is no TEI negotiation. TEI = 0
```

Examples:

The TEI negotiation begins when it is necessary to carry out an outgoing call (default option).

```
bri0/0 BRI config>set global tei-negotiation first-call
```

TEI negotiation begins as soon as the device powers up.

```
bri0/0 BRI config>set global tei-negotiation power-up
```

If you use TEI 0, there is no negotiation whatsoever.

```
bri0/0 BRI config>set global tei-negotiation none-tei-0
```

1.2.7 EXIT

Run **exit** to return to the *Config>* configuration prompt.

Syntax:

```
bri0/0 BRI config>exit
```

Example:

```
bri0/0 BRI config>exit
Config>
```

Chapter 2 Monitoring

2.1 BRI ISDN interface monitoring

This section summarizes and explains all the BRI ISDN interface monitoring commands. These commands let you monitor the interface behavior.

The available monitoring commands are summarized in the below table:

Command	Function
? (HELP)	Lists all the commands or the options available within a command.
ACTIVATE	Activates the physical level and requests the Network for TEI assignation.
BITRATE	Displays the effective data rate per channel.
CALLS	Displays the produced calls.
CAUSE	Returns the meanings of the call release codes.
CLEAR	Initilizes the channels' statistics and clear the released calls buffer.
DISABLE	Disables either of the two B channels.
ENABLE	Enables a B channel that was previously disabled through the **disable** command.
ESTABLISH	Carries out an outgoing call.
LOOPBACK	Enables or disables the digital loop in the ISDN S interface.
RELEASE	Releases a previously established call.
STATISTICS	Displays the statistics of an active B channel.
EXIT	Returns to the global monitoring prompt (+).

Accessing the BRI ISDN monitoring environment

All the BRI ISDN interface monitoring commands must be entered at the monitoring prompt *BRI>*. To access this prompt, carry out the following steps:

(1) At the monitoring prompt (+), run **device** to display the list of interfaces and their associated interface number.

(2) Run **network** followed by the interface name.

Example:

```
+DEVICE

                                  Auto-test   Auto-test     Maintenance
Interface            CSR    Vect      valids    failures        failures
ethernet0/0      fa200e00      27           1           0               0
serial0/0        fa200a00      5E           0         619               0
serial0/1        fa200a20      5D           0         619               0
serial0/2        fa200a60      5B           0         619               0
bri0/0           fa200a40      5C           1           0               0
x25-node                0       0           1           0               0
ppp1                    0       0           0         249               0
+NETWORK BRI0/0

-- BRI ISDN Console --

bri0/0 BRI+
```

2.1.1 ? (HELP)

The **?** (HELP) command lets you view all the valid commands at the level where the interface is being monitored. This command can also be used after a specific command to list the available options.

Syntax:

```
bri0/0 BRI+?
```

Example:

```
bri0/0 BRI+?
ACTIVATE
CALLS
CAUSE
CLEAR
DISABLE
ENABLE
ESTABLISH Call
LOOPBACK
RELEASE Call
STATISTICS
EXIT
bri 0/0 BRI+
```

2.1.2 ACTIVATE

Executing this command provokes physical level activation. Once the physical level has been activated, the device requests the Network for TEI assignment.

Syntax:

```
bri0/0 BRI+ACTIVATE
```

Example:

```
bri0/0 BRI+ACTIVATE

 ISAC status: F7 Activ
Layer1 I:              1  Layer2 I:             1
Tx Bytes:             11  Rx Bytes:            11
Tx underrun:           0  Rx overflow:          0
Rx crc err :           0  Rx aborts  :          0
D collitions:          0  Rx too long:          0

 Lapd Status    : llid 4 - S7 - Active Line. Multiple frame established
                  TEI assigned = 64
bri0/0 BRI+
```

The meaning of the various fields is as follows:

ISAC status	Indicates the level 1 status where the interface is located.
Layer1 I	Number of level 1 interruptions detected in the physical layer chip.
Layer2 I	Number of level 2 interruptions detected in the level 2 controller.
Tx Bytes	Bytes transmitted by the device in channel D.
Rx Bytes	Bytes received in channel D (transmitted by the Network).
Tx underrun	Frames aborted in transmission due to an underrun in the transmission FIFO queue.
Rx overflow	Frames lost due to an overflow in the reception FIFO queue.
Rx crc err	Number of level 2 frames received with crc error.
Rx aborts	Number of level 2 frames received with frame abort.
D collisions	Frames transmitted with collisions in channel D.
Rx too long	Number of level 2 frames that are longer than the level 2 MTU (266 Bytes).
Lapd Status	Indicates the level 2 status (LAPD) where the interface is located.
TEI assigned	Indicates the TEI that has been assigned by the Network.

2.1.3 BITRATE

Displays the effective transmission/reception rate per channel, in bits per second (bps) and packets per second (pps).

Syntax:

```
bri0/0 BRI+bitrate <b_channel>
```

Example:

```
bri0/0 BRI+bitrate
```

```
 Enter circuit (1-2)[1]? 1

      Interface bri0/0 Channel B1
 Trx rate (bps/pps)  Rcv rate (bps/pps)
 ------------------------------------
          0/    0           0/    0
bri0/0 BRI+
```

2.1.4 CALLS

Information on the calls is displayed by running **calls**.

ACTIVE: displays the active calls data.

CLEARED: displays the released calls information.

Syntax:

```
bri0/0 BRI+CALLS <call_type>
bri0/0 BRI+CALLS ?
ACTIVE
CLEARED
```

2.1.4.1 CALLS ACTIVE

Example:

```
bri0/0 BRI+CALLS ACTIVE

TYPE  CALLED NUMBER     CALLING NUMBER REF  CHAN   T/START   D/START    CHARGE
OUT          384200                    001  1-B1   17:11:47  01/20/00   000000

bri0/0 BRI+
```

The meaning of the various fields is as follows:

TYPE	Incoming (IN) or outgoing (OUT).
CALLED NUMBER	Called terminal number.
CALLING NUMBER	Calling terminal number.
REF	Call reference value in use.
CHAN	Line and channel through which the call has been established.
T/START	Indicates the call start time.
D/START	Indicates the day the call was established.
CHARGE	Actual call cost (should the network provide this).

2.1.4.2 CALLS CLEARED

Example:

```
bri0/0 BRI+CALLS CLEARED

L T    CALLED N.  CALLING N. CC  DC  T/START    T/END  D/START    D/END CHARGE
1 O      384200             016 000 16:48:05 17:10:57 01/20/00 01/20/00 000000

bri0/0 BRI+
```

Here, the meaning of the fields is as follows:

L T	Line Identifier and channel Type.
CALLED N.	Called terminal number.
CALLING N.	Calling terminal number.
CC	Call release code (cause).
DC	Diagnostic code.
T/START	Call start time.
T/END	Call release time.
D/START	Day call is established.

D/END	Day call is released.
CHARGE	Call charge (should the network provide this).

Note

For permanent links, calls are not generated as the links are perpetually established.

2.1.5 CAUSE

The **cause** command returns the meaning of a determined release code. This command is for information purposes to comprehend the data presented.

Syntax:

```
bri0/0 BRI+CAUSE <cause_code>
```

Example:

```
bri0/0 BRI+CAUSE 3
Cause (3):  No route to the destination

bri0/0 BRI+
```

2.1.6 CLEAR

Run **clear** to delete the B and D channels statistics. You can also clear the released calls buffer.

Syntax:

```
bri0/0 BRI+CLEAR <option>
bri0/0 BRI+CLEAR ?
CALLS
STATISTICS
```

2.1.6.1 CLEAR CALLS

Clears the released calls buffer.

Example:

```
bri0/0 BRI+CLEAR CALLS
bri0/0 BRI+
```

2.1.6.2 CLEAR STATISTICS

Deletes the statistics for the B and D channels.

Syntax:

```
bri0/0 BRI+CLEAR STATISTICS
```

Example:

```
bri0/0 BRI+CLEAR STATISTICS
bri0/0 BRI+
```

2.1.7 DISABLE

Disables a B channel. Once disabled, you cannot receive or transmit frames through said channel.

When a B channel is disabled, you can still establish and release calls. For example, if a Generic FR or Generic PPP user interface requests the BRI ISDN interface to establish a call and the Network assigns a channel B, B1 for example, and this B channel is disabled, the call is established in the normal way and the user interface will believe that frames can be transmitted and received. However, all frames that are transmitted are discarded in the BRI ISDN interface, which, in turn, ignores all frames received from the remote end.

Warning

Great care must be taken when using **disable**, as if a B channel is inadvertently left disabled, the router behavior could give rise to the belief that there is a fault on the Network or that the device is faulty.

Syntax:

```
bri0/0 BRI+DISABLE <channel>
```

Example:

```
bri0/0 BRI+DISABLE 1
 Circuit B1 disabled
bri0/0 BRI+
```

To disable the B1 channel.

```
bri0/0 BRI+DISABLE 2
 Circuit B2 disabled
bri0/0 BRI+
```

To disable the B2 channel.

2.1.8 ENABLE

Enables a B channel previously disabled through **disable**. Once enabled, you can once more transmit and received frames through said B channel.

Syntax:

```
bri0/0 BRI+ENABLE <channel>
```

Example:

```
bri0/0 BRI+ENABLE 1
 Circuit B1 enabled
bri0/0 BRI+
```

To enable the B1 channel.

```
bri0/0 BRI+ENABLE 2
 Circuit B2 enabled
bri0/0 BRI+
```

To enable the B2 channel.

2.1.9 ESTABLISH Call

Executes outgoing calls. This may, for example, be useful for making test calls and for ensuring that the basic access (where the router is connected) is operating correctly.

To make an outgoing call, a Generic FR or Generic PPP user interface and its associated dial profile must be correctly configured. On executing this command you are prompted for a parameter for the number identifying the user interface. The call then establishes in the same way as if this had been requested from the user interface itself. This command can also be useful to force a user interface to activate and to check it is running correctly.

Once a call has been established, the behavior will be as per usual. E.g. if the profile used for the call has a release time of 30 seconds due to absence of data, the call will be released as soon as this time period without data has timed out. In the same way, the rest of the profile parameters that may affect the call are respected.

Note

If the dial profile being used does not permit outgoing calls, it will not be possible to force an outgoing call by running **establish** call.

Syntax:

```
bri0/0 BRI+ESTABLISH <user_ifc_number>
```

Example:

```
bri0/0 BRI+ESTABLISH 6
bri0/0 BRI+
```

Assuming that the interface number 6 is a correctly configured Generic FR or Generic PPP which behaves as a BRI ISDN user.

2.1.10 LOOPBACK

Activates a digital loop in the ISDN interface. The digital loop is needed to execute determined authorization tests over some ISDN standards. These tests are usually carried out in certified laboratories and are always supervised by our qualified staff.

Note

You should never activate a digital loop when the device is in normal operating mode even if the ISDN interface stops behaving correctly.

Syntax:

```
bri0/0 BRI+LOOPBACK <ENABLE or DISABLE>
bri0/0 BRI+LOOPBACK ?
ENABLE
DISABLE
```

Example:

```
bri0/0 BRI+LOOPBACK ENABLE
Loopback activated
bri0/0 BRI+
```

or

```
bri0/0 BRI+LOOPBACK DISABLE
Loopback deactivated
bri0/0 BRI+
```

2.1.11 RELEASE Call

Releases any call established in the BRI ISDN interface. It makes no difference whether the call you wish to release has been executed in a Generic FR or Generic PPP through own initiative or whether it has been forced through the **establish** call command. In either case, the call will be released.

Note

When a call has been released, the user interface can re-establish it as soon as required (when there is outgoing traffic for example).

On executing this command, the number identifying the user interface responsible for the call in progress will be requested as a parameter. In this way, the call is released in exactly the same way as if it were released by user interface initiative.

Syntax:

```
bri0/0 BRI+RELEASE <user_ifc_number>
```

Example:

```
bri0/0 BRI+RELEASE 6
bri0/0 BRI+
```

Assuming that the interface number 6 is a correctly configured Generic FR or Generic PPP which behaves as a BRI ISDN user.

2.1.12 STATISTICS

Run **statistics** to display statistics for the frames received and transmitted through the B channels and the D channel.

Syntax:

```
bri0/0 BRI+STATISTICS
```

Example:

```
bri0/0 BRI+STATISTICS

Backhaul: Q.931 is TCP backhauled

Circuit   Pkts Rx    Bytes Rx           Bytes Tx
B1            112        5612          111        3552
B2              0           0            0           0



             Statistics circuit B1

 Lost Rx Frames               0   Non aligned Rx frames            0
 Too large frames             0   Aborted Rx sequences             0
 CRC error Rx frames          0   Incomplete Rx frames             0
 Rx fifo failure              0   Tx fifo failure                  0

             Statistics circuit B2

 Lost Rx Frames               0   Non aligned Rx frames            0
 Too large frames             0   Aborted Rx sequences             0
 CRC error Rx frames          0   Incomplete Rx frames             0
 Rx fifo failure              0   Tx fifo failure                  0

             Statistics D-Channel

LAPD llid 4 stats

I Frames   : transmitted  =        2    received  =        3
RR Frames  : transmitted  =      523    received  =      522
RNR Frames : transmitted  =        0    received  =        0
REJ Frames : transmitted  =        0    received  =        0
FRMR Frames: transmitted  =        0    received  =        0
UI Frames  : transmitted  =        0    received  =        0
Errors in N(S):        0

bri0/0 BRI+
```

When the interface has the MGCP backhaul mode enabled, the text **Backhaul** is displayed together with the comment **Q.931 is TCP backhauled** if the interface is being controlled by the Call Agent or **Fallback mode. Local Q.931** if the application is in fallback. If this is not configured this line does not appear.

The meaning of the subsequent fields is as follows:

Pkts Rx	Packets received in the B channel.
Bytes Rx	Bytes received in the B channel.
Pkts Tx	Packets transmitted in the B channel.
Bytes Tx	Bytes transmitted in the B channel.
Lost Rx Frames	Frames lost at reception.
Too large frames	Received frames that exceed the MTU maximum length.
CRC error Rx frames	Received frames with error in the Cyclic Redundancy Code.
Rx fifo failure	Failures due to overflows in the reception FIFO queue.
Non aligned Rx frames	Received frames non-aligned to octet.
Aborted Rx sequences	Aborted frames received.
Incomplete Rx frames	Incomplete frames received.
Tx fifo failure	Frames aborted in transmission due to underrun in the transmission FIFO queue.
I Frames	I frames transmitted or received through the D channel.
RR Frames	RR frames transmitted or received through the D channel.
RNR Frames	RNR frames transmitted or received through the D channel.
REJ Frames	REJ frames transmitted or received through the D channel.

FRMR Frames	FRMR frames transmitted or received through the D channel.
UI Frames	UI frames transmitted or received through the D channel.
Errors in N(S)	Received frames with error in the sequence number.

2.1.13 EXIT

Run **exit** to return to the global monitoring prompt (+).

Syntax:

```
bri0/0 BRI+EXIT
```

Example:

```
bri0/0 BRI+EXIT
+
```

2.2 Other BRI ISDN interface statistics

To view the summarized information on the state and the statistics of the BRI ISDN interface, run **device** at the monitoring prompt (+) and indicate the number of the BRI ISDN interface.

Example:

```
+DEVICE

                                  Auto-test   Auto-test     Maintenance
Interface            CSR    Vect      valids    failures       failures
ethernet0/0     fa200e00      27           1           0              0
serial0/0       fa200a00      5E           0          10              0
serial0/1       fa200a20      5D           0          10              0
serial0/2       fa200a60      5B           0          10              0
bri0/0          fa200a40      5C           1           0              0
x25-node               0       0           1           0              0
atm3/0          f0000000      22           0           5              0

+DEVICE BRI0/0

                                  Auto-test   Auto-test     Maintenance
Interface            CSR    Vect      valids    failures       failures
bri0/0          fa200a40      5C           1           0              0

ISAC status: F3 Pup
 Layer1 I:              1  Layer2 I:             1
 Tx Bytes:              0  Rx Bytes:             0
 Tx underrun:           0  Rx overflow:          0
 Rx crc err :           0  Rx aborts  :          0
 D collitions:          0  Rx too long:          0

 Lapd Status    : llid 4 - S1 - TEI unassigned

Q931 Status:  ID 0: U0
Q931 Status:  ID 1: U0


+
```

The meaning of the fields is as follows:

Interface	Type of interface and index.
CSR	Control/status/data registers address.
Vect	Interruption vector associated to the interface.
Auto-test valids	Number of successful Auto-tests. This does not update for the BRI ISDN interface.
Auto-test failures	Number of failed Auto-tests. This does not update for the BRI ISDN interface.
Maintenance failures	Number of maintenance failures. This does not update for the BRI ISDN interface.

The remaining parameters provide information on the level 1 (I.430), 2 (LAPD) and 3 (Q.931) states. This is further

explained in previous sections contained in this manual.

Appendix A Personalized Parameters

A.1 Supported Personalized Parameters

Our devices have personalized parameters that modify the behavior of the device *under certain special circumstances* (personalized versions). For further information on the activation, deactivation and listing of these parameters, please see the help command in the **enable, patch, disable patch** and **list patch** commands respectively. These can be found in manual in chapter 2 of manual *bintec Dm704-I Configuration and Monitoring.*

Our router ISDN interface has the following personalized parameter available:

ISDN_NUMBER_PLAN

This patch controls the type of number and the called ISDN number numeration plan. This is inserted from releases 8.3.11 and 8.4.3.

Value: 0 Uses value 0x80 = Num UNKNOWN – Plan UNKNOWN.

Value: x Use the programmed value (values 0x01 – 0xFF).

129 (0x81) ISDN numeration plan.

131 (0x83) Data numeration plan.

144 (0x90) International number.

160 (0xA0) National number.

192 (0xC0) Subscriber number.