DTE-to-DCE INTERFACE
CALL ESTABLISHMENT AND TERMINATION SPECIFICATION
Based upon CCITT Recommendation V.25 bis

Cisco Systems
Ascend Communications

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I. Overview. The purpose of this document is to define a DTE-to-DCE interface for setting up and tearing down calls between data terminal equipment (DTE) and data communications equipment (DCE) using the Public Switched Digital Network (PSDN).

This interface specification was written by Ascend Communications and Cisco Systems to allow Cisco LAN routing products (DTE) to use Ascend bandwidth-on-demand products (DCE) to create wide-area networks. It is based upon CCITT Recommendation V.25 bis. Certain capabilities described in V.25 bis are not appropriate to this interface and have been omitted, while several extensions to V.25 bis were included to accomodate capabilities offered by the PSDN which are not addressed by V.25 bis. Extensions are noted in this document by underlined text.

In the interest of open standards and universal connectivity, Cisco Systems and Ascend Communications are publishing this specification to all equipment manufacturers. By implementing this interface specification, various data communications manufacturers can produce equipment which connects to Cisco LAN routing products or Ascend bandwidth-on-demand products, benefitting both end users and the communications industry in general.

II. General. V.25 bis describes two modes of establishing or receiving calls.

- The direct call mode allows the use of DTR signal transitions from the DCE to establish and terminate calls.

- The addressed call mode allows the use of control signals and commands sent over the DCE data interface to establish and terminate calls. These commands are packaged in synchronous data frames and are sent when the interface is not in use for data transfer; that is, when a call does not exist.

This specification supports the addressed call mode of V.25 bis.

III.

Addressed Call Mode

A. Framing.

Legend:
F = flag = 7E hex

A = Address = FF hex

C = Control = 03 hex or 13 hex

FCS = Frame Check Sequence (CRC)

Figure 1. Frame format.

The bit-oriented frame is compatible with HDLC and SDLC synchronous protocol frame formats (see figure 1). All commands and indications are preceded with at least one flag (F) in an HDLC unnumbered information frame with the address (A) set to global. Generally, the poll/final (P/F) is set to 1. Consequently, the A and C fields are generally as follows:

A = 11111111
C = 11001000 (LSB.....MSB)

However, when a succession of indications is transmitted the P/F bit should be set to 0, i.e. the control field is changed to:

C = 11000000 (LSB.....MSB)

with all but the last indication of the succession, to indicate that other indications are coming.

Within the message, consecutive 8-bit data units are used and submitted to the HDLC framing (zero insertion). The 8-bit data units are formed by a 7-bit IA5 character in accordance with CCITT

Recommendation T.50 together with an eighth bit set indifferently either to “one” or “zero”, or the odd parity. No parity checking will be done on reception.

The bit rate used for the data transfer as specified in the DCE current call profile shall apply. When the DCE supplies all clocks to the DTE, an incoming call will induce commands to the DTE at the data rate specified in the current DCE call profile, not at the rate of the incoming call. Upon call connection, the clock rate shall be changed by the DCE to the rate of the incoming call.

B. Message Format and Encoding. The message format shall comprise:

- A three-character command/indication (see tables 2 and 3).

- One or more parameters separated by “;” characters. Valid dial characters are shown in table 1.

Digit	IA5 coding	Comments
0	0	
1	1	
2	2	
3	3	
4	4	
5	5	
6	6	
7	7	
8	8	
9	9	
*	*	Extension to V.25 bis.
#	#	Extension to V.25 bis.
-	-	No effect (ignored). Allowed in dial strings. Extension to V.25 bis.
,	,	No effect (ignored). Allowed in dial strings. Extension to V.25 bis.
(space)	(space)	No effect (ignored). Allowed in dial strings.

.	.	No effect (ignored). Allowed in dial strings.
Wait tone	:	Waits for next connect message from remote end.
Pause	<	Inserts 2 second pause into dialing string. Ignored when ISDN signaling is used.
Pulse Dial	P	Use pulse dialing for signaling purposes when not using ISDN signaling.
Tone Dial	T	Use tone dialing for signaling purposes when not using ISDN signaling.
Flash	&	Send hook flash to network. Ignored when ISDN signaling is used.
Separator 3	=	For national use.
Separator 4	>	For national use.
Sub-parameter separator	/	Extension to V.25 bis for ICLID/ANI and sub-addressing.With regard to incoming calls, this extension allows the DCE to provide the DTE with ICLID/ANI indication (Incoming Call ID/Automatic Number Identifier). With regard to outgoing calls, this extension allows the DTE to provide the DCE with dialed-number sub-addressing (for example, PBX extension addressing).
Delimiter	;	For separation of parameters within command string.

Table 1. Valid characters for dial parameters.

C. Command/indication exchange protocol. The exchange of commands and indications between the DTE and the DCE can be regarded as asynchronous and balanced.

The following basic rules apply:

- Every command is to be followed by, at least, one indication or by circuit 107 going ON in the case of a successful call.

- Several indications may be issued by the DCE, one after the other, either of the same nature or of a different nature.

- The issue by the DTE of new commands other than DIC prior to the reception of the indication to the previous command may abort the execution of this previous command and should therefore be avoided.

D. Erroneous command/indication

- Whenever a command/indication is detected with a level II framing error (incorrect framing or FCS), this command/indication is disregarded.

- Whenever the DCE detects an error in the message of a command or receives a command which cannot be executed, it acknowledges negatively this command by issuing and *invalid* indication (INV). The letters within opcodes for commands and indications shall be upper case ASCII letters. However, the DCE will accept the presence of corresponding lower case letters in place of specified upper case letters within the three letter opcode of a command.

E. Commands

Command		Response
CRN	Call Request	CNX indication when call is successfully completed. CFI indication when call is unsuccessful.
CRS	Call Request with memory address provided	CNX indication when call is successfully completed. CFI indication when call is unsuccessful. CFINS when insufficient data in memory
DIC	Disregard Incoming Call	VAL
CIC	Connect Incoming Call	VAL

Table 2. Commands (from DTE to DCE)

CRNn - Call Requested Number

This command instructs the DCE unit to call the indicated number. See table 1 for valid digits and dial modifiers. The dial string is limited to 20 digits.

Note that if *n* is blank, the DCE dials the number in the current call profile.

Note also the additional parameters allowed to be included with this command (see table 3). These extensions are not required with the CRN message; if they are not included, the DCE will establish the call using the parameters of the current call profile. When these additional parameters are included, the DCE will place the call with these parameters. Note that if a call is placed with these parameters and then terminated, the DCE will revert to the parameters stored in the current call profile for subsequent calls unless the subsequent calls include these additional parameters. In other

words, placing a call using these additional parameters does not mean that these parameters are in any way stored or memorized by the DCE for subsequent calls.

Additional Parameters for use with CRN command. This specification allows additional parameters not specified in CCITT recommendation V.25 bis to be included with this command (see table 3). These extensions are not required with the CRN message; if they are not included, the DCE will establish the call using the parameters of the current call profile. When these additional parameters are included, the DCE will place the call with these parameters. Note that if a call is placed with these parameters and then terminated, the DCE will revert to the parameters stored in the current call profile for subsequent calls unless the subsequent calls include these additional parameters. In other words, placing a call using these additional parameters does not mean that these parameters are in any way stored or memorized by the DCE for subsequent calls.

SCT	Switched Call Type**	56,64,N56,N64,384,N384,1536, 56R,64R,N56R,N64R,384R,N384R,1536R
BWR	Bandwidth Range	minimum # channels-maximum # channels (used with equipment which allows dynamic changes in allocated bandwidth).

** Switched Call Type service descriptions:

56	switched 56 service
64	switched 64 service
384	switched 384 service
1536	switched 1536 service
N56	Nx56 service
N64	Nx64 service
N384	Nx384 service
56R	switched 56 service (restricted data)
64 R	switched 64 service (restricted data)
384 R	switched 384 service (restricted data)
1536R	switched 1536 service (restricted data)
N56R	Nx56 service (restricted data)
N64R	Nx64 service (restricted data)
N384R	Nx384 service (restricted data)

Table 3. Additional Parameters for CRN commands(from DTE to DCE)

Examples of CRN command strings are:

CRN3979015;SCTN56;BWR1-24	calls 397-9015 using Nx56 and BWR from 1 to 24 channels
CRN14156789012;SCT384;BWR1-1	calls 1-415-678-9012 using Switched 384 and BWR fixed at 1 channel

CRN6789012/4567;SCTN64;BWR6-12	calls 678-9012 with sub-address 4567 using Nx64 and BWR from 6 to 12 channels
CRN9012	calls 9012 using parameters in current DCE call profile

CRSa - Call Request with address

This command instructs the DCE unit to establish a call to a destination using parameters from a call profile stored in the DCE memory. No other parameters may be specified by the DTE other than a one to three digit address (1-999) which points to a specific pre-stored call profile in the DCE memory. The DTE can not read, modify, or store these DCE call profiles; it can only initiate calls by addressing call profiles in known memory locations. If a phone number or other required information for a call is not stored in the addressed location the CFINS call failure response is returned from the DCE to the DTE.

Examples of CRS command strings:

CRS4	calls location with parameters stored in DCE call profile #4
CRS109	calls location with parameters stored in DCE call profile #109

DIC - Disregard Incoming Call

Disregards incoming call. In an ISDN environment, the incoming call is rejected via the appropriate ISDN message from the DCE to the network. In a non-ISDN environment, indication to the DTE of the incoming call ceases while the incoming call continues to "ring" until terminated by the calling end. However, if another incoming call is presented from the network on another channel while the disregarded call continues to ring, a new INC message and RI indication to the DTE are generated.

CIC - Connect Incoming Call

This command instructs the DCE unit to immediately answer an incoming call. If the DCE had previously been configured to automatically answer the call (auto answer), then it would automatically answer the call anyway. If a call exists or is in the process of being answered when this command is sent, the DCE responds with a valid (VAL) indication. If no call exists, no call is in the process of being answered when this command is sent, and there is no incoming call when this command is sent, then the DCE responds with an invalid (INV) response.

F. Indications

INC	Incoming Call	A call is being offered to DCE by the network.
INV	Invalid	Invalid command entered.
VAL	Valid	Execution of CRN, DIC, and CIC command successful.
CFI	Call Failure	Unsuccessful call attempt by CRN command.

Table 4. Indications (from DCE to DTE)

INC - Incoming call

The DCE sends this response whenever it detects an incoming call. Note that an extension has been included to allow ICLID/ANI indication (Incoming Call ID/Automatic Number Identifier). The capability to provide this extension is optional and the DCE should allow the user to choose whether or not this capability is enabled. Note that the network must be capable of providing ICLID/ANI information for this extension to work. If the V.25 bis extension is enabled and no ICLID/ANI information is provided by the network, DCE will not provide any ICLID/ANI information.

Examples:	INC	; incoming call
	INC/3979015	; incoming call from 397-9015
	INC/3979015/4567	; incoming call from 397-9015, sub-address 4567

INV - Invalid

The DCE sends this response whenever an incorrect command has been provided to the DCE, or if the DCE cannot execute the command. The CCITT recommendation allows optional additional parameters to be included which detail the cause of the INV response, but in this specification the DCE does not offer these additional parameters to the DTE.

VAL - Valid

The DCE responds to CIC, CRN, and DIC commands with the VAL response whenever the DCE can successfully carry out the command.

CFIxx - Call Failure Indication

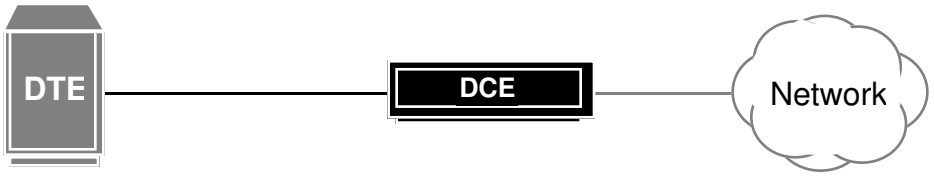
The DCE responds to unsuccessful CRN or CRS commands with the CFI response. The CFI response is accompanied by a cause code (xx). The values for xx are:

AB - Abort	The DCE aborted the call for one of several reasons, which can include but not be limited to: no network availability, network congestion, time-out condition, etc.
CB - DCE Busy	The DCE detected an incoming call after a dialing command was issued by the DTE ("glare"), or the DCE is already in the process of dialing or answering a call.
ET - Engaged Tone (far end busy)	The called station is busy.
NT- No Tone	After dialing the call, the DCE was not able successfully initiate or complete the handshake process. This could indicate a network problem, a faulty connection to called site, the dialing of an incorrect number, or a problem with the remote DCE unit. The local DCE will wait for a predetermined period before timing out.
NS-Not Stored	No phone number or other required information is stored in the address requested by the CRS command.
RT- Ring Tone	The remote end was ringing but the call was aborted because the remote end did not answer before a timeout period had elapsed.

G. V.25 bis addressed mode examples.

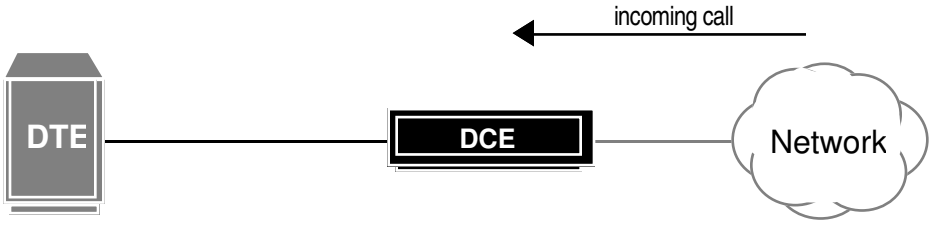
1. Incoming Call.

The devices are idle (IDLE state).



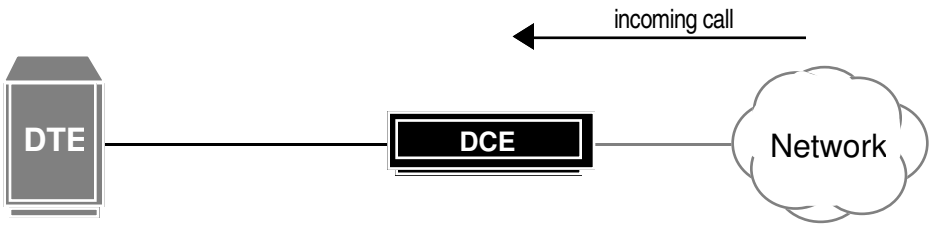

```
DTR non-significant          CTS/DCD follows DTR
                             DSR inactive
                             RI inactive
```

When the DCE detects an incoming call, it makes RI active and sends INC to indicate incoming call to the DTE (RINGING state).



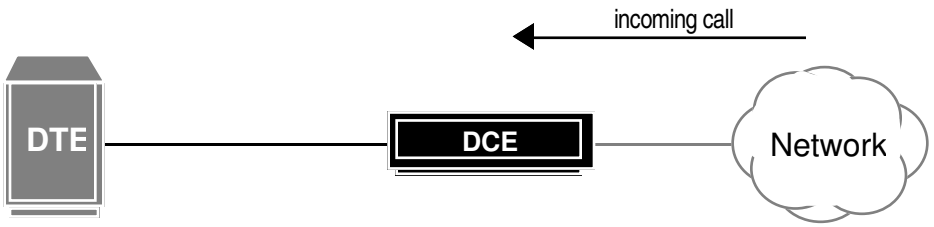

```
                  <----      (INC)

                             CTS/DCD follows DTR
                             DSR inactive
                             RI active
```

The DTE responds by sending either CIC (connect incoming call) or DIC (disregard incoming call).



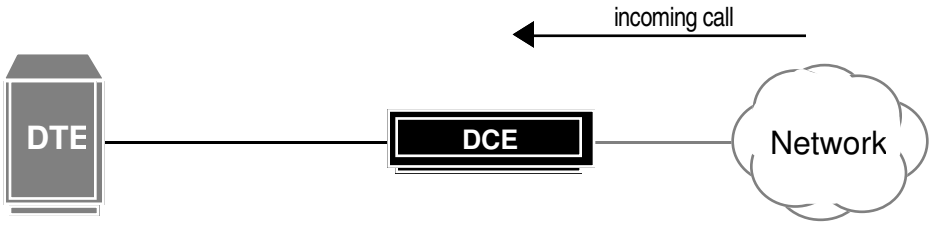

```
                <----        (INC)

(CIC or DIC)    ---->

                             CTS/DCD follows DTR
                             DSR inactive
                             RI active
```

If the command is DIC, then the DCE disregards the incoming call and returns to the IDLE state. (In an ISDN environment, the incoming call is rejected via the appropriate ISDN message from the DCE to the network. In a non-ISDN environment, indication to the DTE of the incoming call ceases while the incoming call is allowed to "ring" until terminated by the calling end; however, if another incoming call is presented from the network on another channel, that initiates a new INC message and RI indication to the DTE). If the command is CIC, the DCE enters the answering state, responds to the command with the VAL indication, and attempts to connect to the incoming call. If the connection is unsuccessful, the DCE returns the appropriate CFI response. If the connection is successful, the DCE enters the CONNECTED state, sets the DCD signal to active, and begins data transfer.




```
                                (RINGING state)

                                CTS/DCD follows DTR
                                DSR inactive
                                RI active

                        <----   (INC)

          (CIC or DIC)  ---->

                        <----   (VAL)
[upon successful attempt to connect to incoming call, enters CONNECTED state]


                                CTS/DCD inactive
                                DSR active
                                RI inactive
```

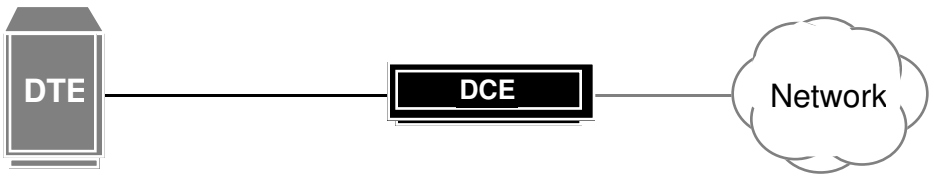
--OR--




```
                                (RINGING state)

                                CTS/DCD follows DTR
                                DSR inactive
                                RI active

                    <----       (INC)

          (CIC or DIC)    ---->

                    <----       (VAL)

[upon unsuccessful attempt to connect to incoming call, enters IDLE state...]

                    <----       (CFIxx)

                                CTS/DCD follows DTR
                                DSR inactive
                                RI inactive
```

2. *Outgoing call.*

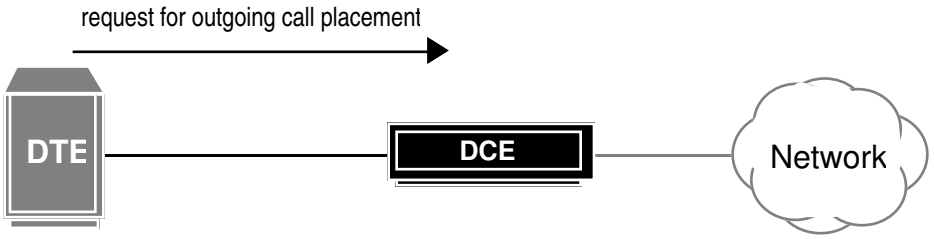
The devices are idle (IDLE state).




```
DTR non-significant             CTS/DCD follows DTR
                                DSR inactive
                                RI inactive
```

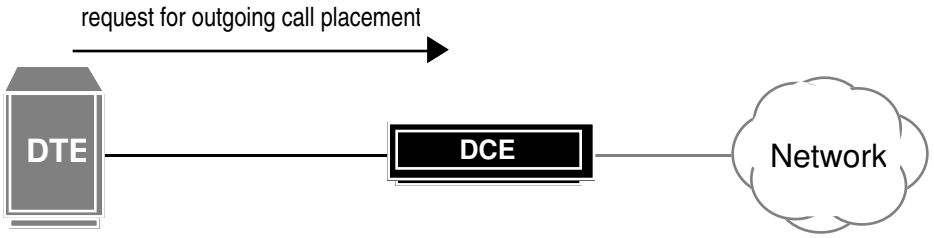
When the DTE wants to establish a call, it sends CRN to the DCE. If parameters are not included with the CRN command, the DCE will use the parameters stored in the current call profile. Typically, the DTE will provide the DCE with a destination number, and optionally the call type and bandwidth. If the command can be acted upon by the DCE, a VAL indication is returned and the DCE enters the

DIALING state. If the call cannot be acted upon (for example, an incoming call has been detected) then the CFI response is returned and the DCE remains in the IDLE state.



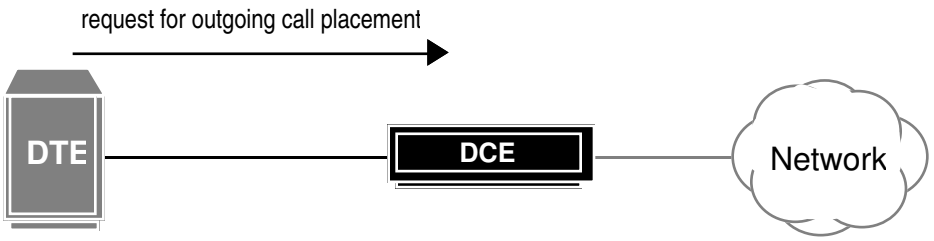

```
(CRN1234)        ---->

[if DCE can act upon CRN command, enters DIALING state...]

                 <----        (VAL)

                              CTS/DCD follows DTR
                              DSR inactive
                              RI inactive
```

--OR--



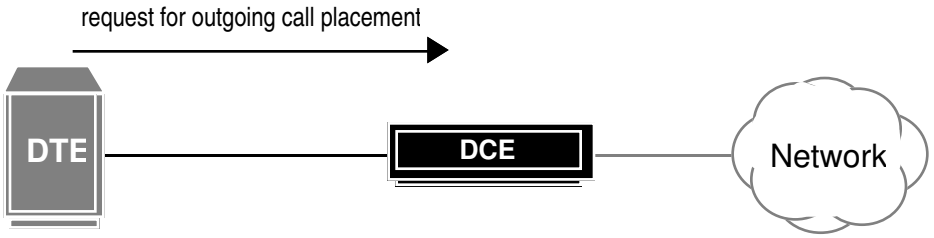

```
(CRNnnnnnn)                   ---->

[if DCE cannot act upon CRN command, remains in IDLE state...]

                 <----        (CFIxx)

                              CTS/DCD follows DTR
                              DSR inactive
                              RI inactive
```

If the call cannot be successfully completed, the DCE returns the appropriate CFI indication. If the call is successfully completed, the DCE enters the CONNECTED state and sets the DCD signal to active and the DSR signal to inactive.




```
      (CRNnnnnnn)            ---->

                             <----     (VAL)

[upon successful attempt to complete outgoing call, enters CONNECTED state]

                             <----     (CNX)

                                       CTS/DCD inactive
                                       DSR active
                                       RI inactive
```

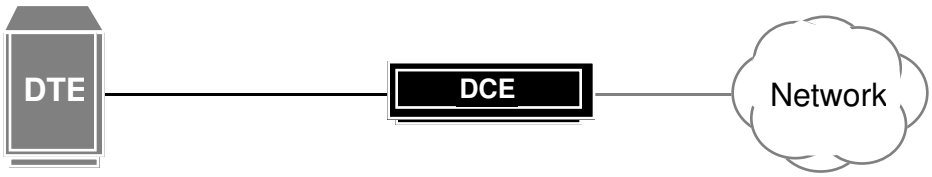
--OR--




```
      (CRNnnnnnn)            ---->

                             <----     (VAL)

[upon unsuccessful attempt to complete outgoing call, remains in IDLE
state...]

                             <----     (CFIxx)

                                       CTS/DCD follows DTR
                                       DSR inactive
                                       RI inactive
```

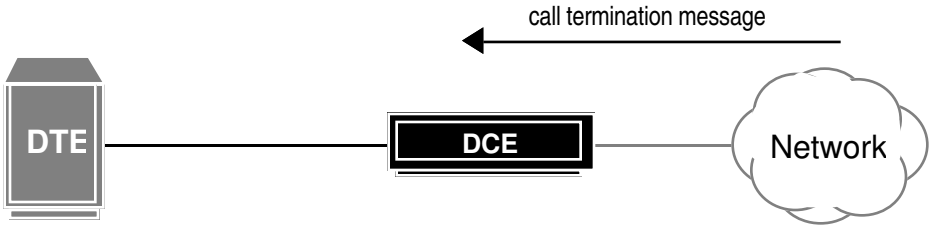
3. Call termination, remote origination.

A call exists (CONNECTED state).




```
                                CTS/DCD inactive
                                DSR active
                                RI inactive
```

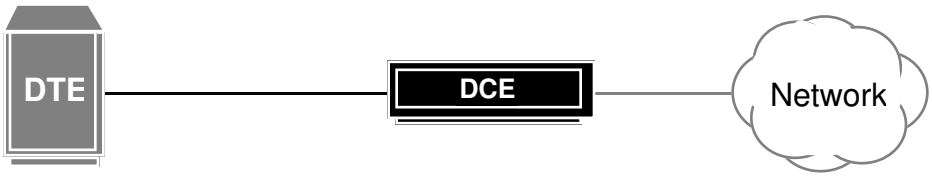
When the remote DTE terminates the call, DCD goes inactive from the DCE. This indicates to the DTE that the call has been terminated and the units re-enter the IDLE state.




```
DTR non-significant             CTS/DCD follows DTR
                                DSR inactive
                                RI inactive
```

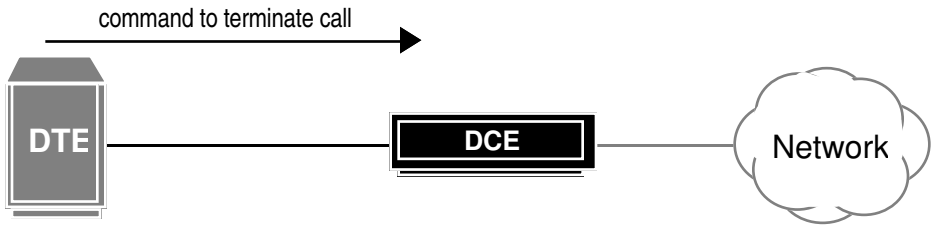
4. Call termination, local origination.

A call exists (CONNECTED state). Note that, to locally terminate a call, DTR must initially be active.



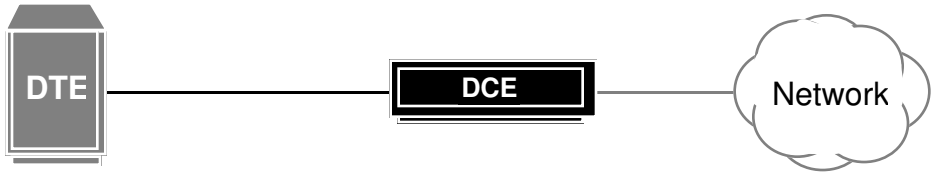

```
DTR active                      CTS/DCD inactive
                                DSR active
                                RI inactive
```

To locally terminate a call, the DTE makes DTR inactive. The DCE responds by clearing the call, and the units return to the IDLE state.




```
DTR inactive                    CTS/DCD follows DTR
                                DSR inactive
                                RI inactive
```

Note that, in the idle state, the DTR state is non-significant. This allows DCE to support units which normally operate with DTR active and momentarily pulse DTR inactive to terminate calls.




```
DTR non-significant             CTS/DCD follows DTR
                                DSR inactive
                                RI inactive
```

IV. Appendix A. V.25 bis State Transition Table

A. Reading the V.25bis State Transition Table. The V.25bis state transition table that follows is the most precise definition of the V.25bis operation of the DCE. Though at first glance the table may appear difficult to understand, after learning its format, it is a very clear mechanism for describing V.25 bis state transitions.

B. The DCE V.25bis States. Across the top of the chart are the states that DCE is aware of in conjunction with the V.25bis protocol operation. Each state is assigned both a letter and a description. The states defined for the protocol are:

A	**Idle** There are no incoming or outgoing calls in progress, and there is no active session.
B	**Ringing** There is an incoming call from the network that has not been answered or rejected by the DTE yet.
C	**Answering** An incoming call has been presented to the DTE, and the DTE has elected to answer the incoming call. The DCE is in the process of establishing the end-to-end connection.
D	**Connected** There is an active end-to-end DCE session.
E	**Dialing** The DTE requested an outgoing call, and the DCE is in the process of calling the far end, based on the parameters passed by the DTE.

C. The Control Interchange Circuits. There are four control interchange circuits that are defined as part of the CCITT V.25bis protocol. They are described in section 4.1.1 of the CCITT specification. Each of the circuits is associated with its number and name. The state of the circuits is dependent upon the DCE state as defined above.

For clarity, the *names* of the circuits in the State Transition Table are those which are understood in the EIA RS-232C specification. However, for clarity, the *number* is specified out of the CCITT specificaton.

Just below the state names described in the above are the states of each of the control circuits in that state. For example, in the Idle state the circuits have the following states:

107	**DSR**	Logical Inactive State
106	**CTS/CD**	Follows the state of the incoming DTR circuit
108	**DTR**	Don't Care – Can be in either state from the DTE in the idle state.
125	**RI**	Logical Inactive State

D. The V.25bis Events. Below the control interchange circuit names on the left of the state transition table are the possible events that can occur as they relate the the V.25bis interchange between the DTE and the DCE. The events, starting with **Incoming Call**, are relatively self-explanatory within the context of the protocol.

E. The Actions and Transitions. The matrix built out of the states along the top and the possible events along the left side form all of the possible events in each of the possible states. Each Event/State pair is a cell within the matrix.

The format of each cell is as follows:

[Action to perform] , [State to transition to]

For example, the string "1,B" found in the Incoming Call / Idle cell in the upper left hand corner can be read as follows:

> If an incoming call comes in when the DCE is in the Idle state, perform action number 1 found on the State Transition Table Events list, and transition to state B, updating the control circuits as appropriate.

There are two special characters found in the cells. The first is the "-" character. When the "-" is used in place of an action to perform, it is an indication that no action is required.

Likewise, when the "*" is used in place of the state to transition to, it is an indication that no state transition is required.

F. The State Transition Table Events. With the information covered above, the DCE's response to any external event relating to the V.25bis protocol and therefore how the DTE should react can be determined. The final missing piece is the detailed description of each of the actions, which is critical.

On the second page is a simple list of the action numbers and the description of what the DCE will do as part of each action. Note that the details of the message descriptions can be found in the body of the specification, and will have to be parsed by the DTE and DCE.

V.25bis State Transition Table

DCE Perspective

Event \ State	A Idle	B Ringing	C Answering	D Connected	E Dialing
DSR State (107)	Inactive	Inactive	Inactive	Active	Inactive
CTS/CD State (106)	DTR->	DTR->	DTR->	Inactive	DTR->
DTR State (108/2)	Don't Care	Don't Care	Don't Care	Don't Care	Don't Care
RI State (125)	Inactive	Active	Active	Inactive	Inactive
Incoming Call	1,B	-,*	-,*	-,*	-,*
Ring Message Timer Expire	-,*	1,*	-,*	-,*	-,*
Incoming Call Dropped	-,*	2,A	7,A	-,*	-,*
]DTR Transition to Active	-,*	-,*	-,*	-,*	-,*
DTR Transition to Inactive	-,*	3,A	7,A	8,A	7,A
CRN/CRS Message Received	10,E	6,*	-,*	-,*	-,*
DIC Message Received	9,*	4,A	-,*	-,*	-,*
CIC Message Received	9,*	5,C	-,*	-,*	-,*
End-To-End Connection	-,*	-,*	-,D	-,*	-,D
Far End Disconnect	-,*	-,*	-,*	-,A	-,A
Any Invalid Message	11,*	11,*	-,*	-,*	-,*

V.25bis State Transition Table Events

DCE Perspective

1 Send INC message to DTE
Start Ring Message Timer (10 seconds)

2 Send CFI message to DTE
Cancel Ring Message Timer

3 Reject incoming call to network
Cancel Ring Message Timer

4 Send VAL message to DTE
Reject incoming call to network
Cancel Ring Message Timer

5 Send VAL message to DTE
Send answer message to network
Cancel Ring Message Timer

6 Send CFICB message to DTE

7 Send CFI message to DTE

8 Clear active call to network

9 Send INV message to DTE

10 Send VAL message to DTE
Place outgoing through network

11 Send INV message to DTE

V. Appendix B. Cisco Systems, Inc.

For information about Cisco products adhering to this specification, please contact:

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VI. **Appendix C.** Ascend Communications, Inc.

The Ascend Multiband Bandwidth-on-Demand Controller implements this specification as written. The following comments are provided for a more complete understanding of Multiband's implementation of this specification. For more information, please consult the Ascend Multiband user's manual.

A. **Call Profiles.** Multiband allows the storage of "sets" of parameters for calls. These sets are called Call Profiles. The parameters in a call profile include the phone number, the type of switched service, the bandwidth of the call, the allowable range of bandwidth variation, the parameters associated with bandwidth variation, etc. Each call profile is stored in a specific memory location and can be loaded (i.e., made the "active call profile") and a call initiated with its parameters via the CRS (Call Request Stored) command. Any call made using the CRN (Call Request with number) command uses the parameters associated with the current active call profile, except for those parameters passed along to the Multiband with the CRN command. Thus, a CRN command of the format "CRN3979015;SCTN56;BWR1-24" initiates a call using all parameters associated with the current active call profile but substituting 397-9015 for the telephone number, Nx56 for the switched service type, and a bandwidth range of 1 to 24 channels. These parameters passed along in the CRN command are not stored in the Multiband's current active call profile.

B. **Data Clock Rate.** To maintain full synchronization with the network, Multiband supplies all data clocks to the DTE. When no call exists, Multiband provides to the DTE a bit rate of 64 kbit/s, synchronized to the network. An incoming call will induce commands to the DTE at the 64 kbit/s data rate, not at the rate of the incoming call. Upon call connection, the clock rate shall be changed by the Multiband to the rate of the incoming call.

C. Message Format and Encoding. The following comments apply to the message format associated with the CRN command.

Pause	<	Inserts 2 second pause into dialing string. Ignored when ISDN signaling is used.
(Always ignored in current version of Multiband.)		
Pulse Dial	P	Use pulse dialing for signaling purposes when not using ISDN signaling.
(Always ignored in current version of Multiband, which uses either ISDN signaling or DTMF signaling.)		
Tone Dial	T	Use tone dialing (DTMF) for signaling purposes when not using ISDN signaling.
(Current version of Multiband always uses DTMF dialing for signaling purposes when not using ISDN signaling.)		
Flash	&	Send hook flash to network. Ignored when ISDN signaling is used.
(Always ignored in current version of Multiband.)		
Separator 3	=	For national use.
(Ignored in current version of Multiband.)		
Separator 4	>	For national use.
(Ignored in current version of Multiband.)		
Sub-parameter separator	/	Extension to V.25 bis for ICLID/ANI and sub-addressing.

With regard to incoming calls, this extension allows Multiband to provide the DTE with ICLID/ANI indication (Incoming Call ID/Automatic Number Identifier). The ability to provide this extension is settable in the Multiband System Configuration Menu (choose V.25 bis or V.25 bis EXTENDED).

With regard to outgoing calls, this extension allows the DTE to provide Multiband with dialed-number sub-addressing (for example, PBX extension addressing). This capability is not implemented in the current version of Multiband.

For information about Ascend products adhering to this specification, please contact:

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