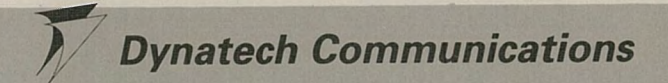


CCITT X.3 SUMMARY		
PARAMETER NUMBER	PARAMETER	DYNATECH VALUES
1	PAD Recall Defined Character	0 or 1 32 - 126
2	Local Echo	0 or 1
3	Data Forwarding Characters	0,1,2,4,6,8,16,18, 32,64,126,127+n
4	Data Forwarding Timeout	0 - 255
5	PAD to Terminal Flow Control	0 - 4
6	Control of PAD Service Signals	0,1,4,5,8 - 15
7	PAD Action on Receipt of Break from Terminal	0,1,2,4,5,8,16,21
8	Discard Output	0 or 1
9	Padding after Carriage Return	0 - 255
10	Line Folding	0 - 255
11	Async Speed (Read Only Parameter)	0 - 18
12	Terminal to PAD Flow Control	0,1
13	Line Feed Insertion	0,1,2,4-7
14	Padding after Line Feed	0 - 255
15	Editing	0 or 1
16	Character Delete Defined Character	0 - 127
17	Buffer Delete Defined Character	0 - 127
18	Buffer Display Defined Character	0 - 127
19	Editing Service Signals	0,1,2,8,32-126
20	Echo Mask	0 - 128+
21	Parity Treatment	0,1,2,3
22	Page Wait	0 - 255

DIAGNOSTIC CAUSE TABLE		
DIAGNOSTIC CODE		MEANING
DECIMAL	HEX	
0	00	No Additional Information
1	01	Invalid P(S)
2	02	Invalid P(R)
15	0F	
16	10	Packet Type Invalid
17	11	Packet Type Invalid for State R1
18	12	Packet Type Invalid for State R2
19	13	Packet Type Invalid for State R3
20	14	Packet Type Invalid for State P1
21	15	Packet Type Invalid for State P2
22	16	Packet Type Invalid for State P3
23	17	Packet Type Invalid for State P4
24	18	Packet Type Invalid for State P5
25	19	Packet Type Invalid for State P6
26	1A	Packet Type Invalid for State P7
27	1B	Packet Type Invalid for State D1
28	1C	Packet Type Invalid for State D2
29	1D	Packet Type Invalid for State D3
31	1F	
32	20	Packet Not Allowed
33	21	Unidentifiable Packet
34	22	Call on One-Way Logical Channel
35	23	Invalid Packet Type on PVC
36	24	Packet on Unassigned Logical Channel

DIAGNOSTIC CAUSE TABLE		
Continued		
DIAGNOSTIC CODE		MEANING
DECIMAL	HEX	
37	25	Reject not Subscribed to
38	26	Packet too Short
39	27	Packet too Long
40	28	Invalid GFI
41	29	Restart or Registration Packet with Non-Zero in Bits 1 to 4 of Octet1, or Bits 1 to 8 of Octet 2
42	2A	Packet Type Not Compatible with Facility
43	2B	Unauthorized Interrupt Confirmation
44	2C	Unauthorized Interrupt
45	2D	Unauthorized Reject
47	2F	
48	30	Time Expired
49	31	Incoming Call
50	32	Clear Indication
51	33	Reset Indication
52	34	Restart Indication
63	3F	
64	40	Call Setup, Call Clearing or Registration Problem
65	41	Facility/Registration Code Not Allowed
66	42	Facility Parameter Not Allowed
67	43	Invalid Called Address
68	44	Invalid Calling Address
69	45	Invalid Facility/Registration Length
70	46	Incoming Call Barred
71	47	No Logical Channel Available
72	48	Call Collision
73	49	Duplicate Facility Request
74	4A	Non-Zero Address Length
75	4B	Non-Zero Facility Length
76	4C	Facility Not Provided when Expected
77	4D	Invalid CCITT-Specified DTE Facility
79	4F	
80	50	Miscellaneous
81	51	Improper Cause Code from DTE
82	52	Non Aligned Octet
83	53	Inconsistent Q Bit Setting
95	5F	
96	60	Not Assigned
111	6F	
112	70	International Problems
113	71	Remote Network Problems
114	72	International Protocol Problems
115	73	International Link Out of Order
116	74	International Link Busy
117	75	Transit Network Facility Problem
118	76	Remote Network Facility Problem
119	77	International Routing Problem
120	78	Temporary Routing Problem
121	79	Unknown Called DNIC
122	7A	Maintenance Action
128	80	Reserved for Network Specific Diagnostic Information
255	FF	

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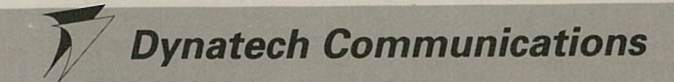
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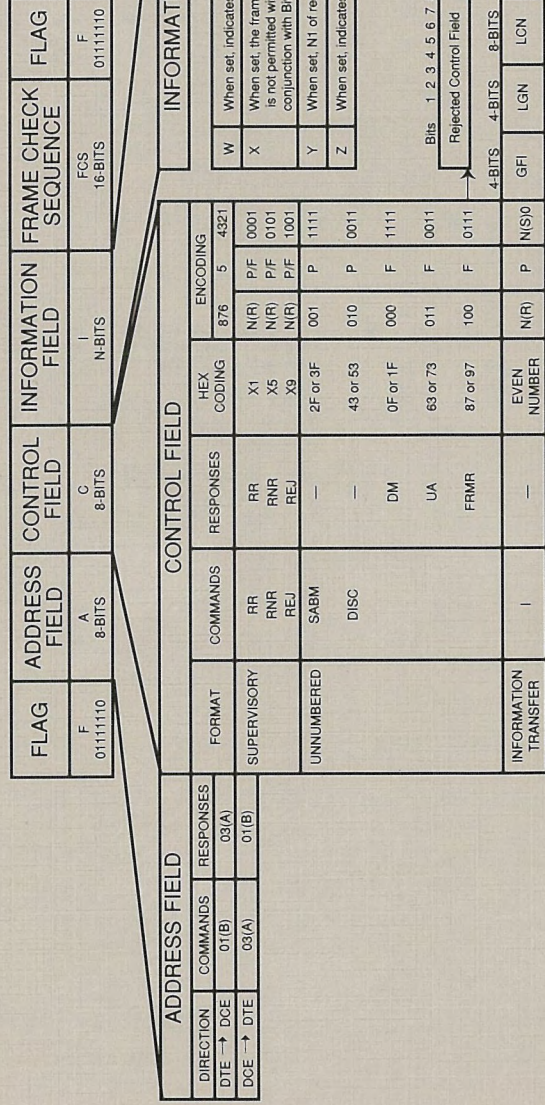
Packet Switching Primer

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 Issue 3



FRAME STRUCTURE



4-BITS 4-BITS 8-BITS 8-BITS

GFI	LGN	LCN	PACKET TYPE
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VARIABLE LENGTHS 0 THRU F BGD

0B	CALLING ADDR. LGH.	4-BITS	4-BITS	0 THRU F BGD	8-BITS	109 BYTE MAX	16-BYTES MAX
0F	CALLING ADDR. LGH.	4-BITS	4-BITS	0 THRU F BGD	8-BITS	109 BYTE MAX	16-BYTES MAX

876 5 4321

(P/R)	M	P(S)	0	DATA (UP TO 4096 BYTES)
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8-BITS

1B	RESET CAUSE	DIAGNOSTIC CODE
----	-------------	-----------------

8-BITS

FB	RESTART CAUSE	DIAGNOSTIC CODE
----	---------------	-----------------

13

	CLEARING CAUSE	DIAGNOSTIC CODE
--	----------------	-----------------

F1

	DIAGNOSTIC CODE	DIAGNOSTIC EXPLANATION UP TO 32 OCTETS
--	-----------------	----------------------------------------

23

	USER DATA FIELD UP TO 32 OCTETS
--	---------------------------------

(P/R) L 00001

(P/R)	L	00001
-------	---	-------

(P/R) L 00101

(P/R)	L	00101
-------	---	-------

(P/R) L 01001

(P/R)	L	01001
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27

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1F

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PACKET LEVEL
(Level 3)
(From Link Level Information Field)

PROTOCOL IDENTIFIER TABLE

BITS 8 7	RECOMMENDED USE
0 0	For CCITT use
0 1	For national use
1 0	Reserved for international users
1 1	For DTE—DTE use

GFI (General Format Identifier)

BIT 8	G BIT (Data Qualifier) DATA PKTS ONLY
Q=0:	DATA PACKET contains user data
Q=1:	DATA PACKET contains control data
BIT 7	D BIT (Delivery Confirmation)
D=0:	End to End ACK not required
D=1:	End to End ACK required
BIT 6	When set, P(S) and P(R) counters in the DATA packets are modulo 128
BIT 5	When set, P(S) and P(R) counters in the DATA packets are modulo 8

VARIABLE LENGTHS 0 THRU F BGD

F3	DTE ADDR. LGH.	4-BITS	DCE ADDR. LGH.	4-BITS	REGISTRATION LGH.	8-BITS	REGISTRATION UP TO 109 OCTETS
F7	8-BITS CAUSE	DIAGNOSTIC ADDR. LGH.	4-BITS	DCE ADDR. LGH.	4-BITS	REGISTRATION LGH.	8-BITS

CLEARING CAUSE TABLE

HEX VALUE	REASON	CLR
00	DTE Originated	DTE
01	Number Busy	OCB
03	Invalid Facility Request	INV
05	Network Congestion	NC
09	Out of Order	DER
0B	Access Barred	MA
0D	Not Obtainable	NP
11	Remote Procedure Error	RPE
13	Local Procedure Error	ERR
15	RPOA Out of Order	ROP
19	Collect Call Refused	NRC
21	Incompatible Destination	ICD
29	Fast Select Not Subscribed	NFS

RESTART CAUSE TABLE

HEX VALUE	REASON
00	Local Procedure Error
03	Network Congestion
07	Network Operational
7F	Registration Cancellation Confirmed

FACILITY CODE CLASSES

CLASS	FACILITY ONE OCTET	PARAM LENGTH	PARAMETER FIELD
A	00—3F	—	1 OCTET
B	40—7F	—	2 OCTETS
C	80—BF	—	3 OCTETS
D	CO—FF	1 OCTET	More than 3 OCTETS

RESET CAUSE TABLE

HEX VALUE	REASON	CLR
00	DTE Originated	DTE
8F—FF	DTE Originated	DTE
1D	Network Out of Order (PVC)	DER
01	Out of Order (PVC)	DER
03	Remote Procedure Error	RPE
05	Local Procedure Error	ERR
07	Network Congestion	NC
09	Remote DTE Operational (PVC)	DTO
0F	Network Operation (PVC)	NO
11	Incompatible Destination	ICD

REGISTRATION CONFIRMATION CAUSES

HEX VALUE	REASON
13	Local Procedure Error
7F	Registration Cancellation Confirmed
03	Invalid Facility Request
05	Network Congestion

FACILITY FIELD

FACILITY TYPE	FACILITY CODE	PARAMETER LENGTH/FIELD
Flow Control Parameter Negotiation	42	0X XX
Packet Size	43	XX XX
Window Size	43	XX XX
Throughput Class Negotiation	02	XX
Closed User Group Selection	03	XX XX
Basic Format	47	XX XX
Extended Format	47	XX XX
Closed User Group with Outgoing Access Selection	09	XX XX
Basic Format	48	XX XX
Extended Format	48	XX XX
Bilateral Closed User Group Selection	41	XX XX
Reverse Chasing	01	01
Fast Select	01	X0
NUJ Selection	06	XX XX
Charging Information	04	01
Requesting Service	05	XX XX
Receiving Information	05	XX XX
Monetary Unit	02	08 XX
Distance	02	08 XX
Segment Count	01	04 XX
Call Duration	01	04 XX
RPOA Selection	44	XX XX
Basic Format	04	XX XX
Extended Format	44	XX XX
Call Redirection Notification	03	0X 0X
Called Line Address Modified Notification	08	XX XX
Transit Delay Selection and Indication	49	XX XX
National Options Marker	00	XX XX

ASCII CHARACTER CODES

BIT POSITIONS 0, 1, 2, 3

BIT POSITIONS 4, 5, 6, 7	HEX	0000	0010	0100	0110	0111	0001
0	NULL	DLE	SP	0	@	P	1 or F
0001	1	SOH	DC1	1	A	Q	a
0010	2	STX	DC2	2	B	R	b
0011	3	ETX	DC3	3	C	S	c
0100	4	EOT	DC4	4	D	T	d
0101	5	ENQ	NAK	5	E	U	e
0110	6	ACK	SYN	6	F	V	f
0111	7	BEL	ETB	7	G	W	g
1000	8	BS	CAN	8	H	X	h
1001	9	HT	EM	9	I	Y	i
1010	A	LF	SUB	10	J	Z	j
1011	B	VT	ESC	11	K	[k
1100	C	FF	FS	12	L	\	l
1101	D	CR	GS	13	M]	m
1110	E	SO	RS	14	N	^	n
1111	F	SI	US	15	O	_	o
							DEL

CCITT X.29 SUMMARY

4-BITS 4-BITS 8-BITS 8-BITS

GFI	LGN	LCN	PACKET TYPE
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8 7 6 5 4 3 2 1

SET	(P/R)	M	P(S)	0	02	PARMS & VALUES
SET & READ	(P/R)	M	P(S)	0	06	PARMS & VALUES
PARAMETER INDICATION	(P/R)	M	P(S)	0	00	PARMS & VALUES
READ	(P/R)	M	P(S)	0	04	PARMS & VALUES
INVITATION TO CLEAR	(P/R)	M	P(S)	0	01	
RESELECTION	(P/R)	M	P(S)	0	07	DATA FIELD
ERROR	(P/R)	M	P(S)	0	05	8-BITS ERROR TYPE
INDICATION OF BREAK	(P/R)	M	P(S)	0	03	8-BITS PARAMETER REFER. VALUE