

SDLC

SYNCHRONOUS DATA LINK CONTROL

APPLIED COMPUTER
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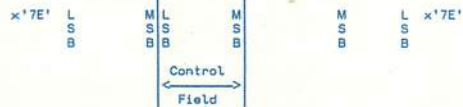
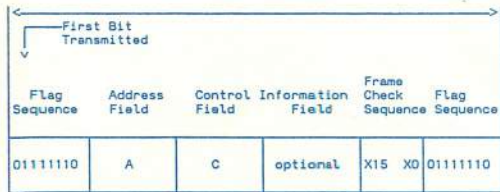
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SDLC Frame Format

[Link Header] [Information] [Link Trailer]

[F] [A] [C] [Information] [F]

SDLC Transmission Frame



I Format: N(r) P/F N(s) 0

S Format: N(r) P/F S S 0 1

U Format: M M P/F M M 1 1

LSB - Least Significant Bit
MSB - Most Significant Bit
N(S) - Send Sequence Count
N(R) - Receive Sequence Count
S - Supervisory Function Bits
M - Modifier Function Bits
P/F - Poll bit - In command Frames
Final Bit - In response Frames
(1 - poll/final)

C-FIELD

SDLC Command / Response C-Field

Frame Format	Value P	Value R	Acronym	Cmd Rsp	Command Name	
Unnumbered Format	13	03	UI	C/R	Unnumbered Information	
	17	07	RIM	R	Request Initialization	
	17	07	SIM	C	Set Initialization Mode	
	1F	0F	DM	R	Disconnect Mode	
	23	33	UP	C	Unnumbered Poll	
	53	43	RD	R	Request Disconnect	
	53	43	DISC	C	Disconnect	
	73	63	UA	R	Unnumbered Acknowledge	
	93	83	SNRM	C	Set Normal Response Mode	
	97	87	FRMR	R	Frame Reject	
	BF	AF	XID	C/R	Exchange Identification	
	F3	E3	TEST	C/R	Test	
	Super- visory Format	x1 x5 x9	x1 x5 x9	RR RNR REJ	C/R C/R C/R	Receive Ready Receive Not Ready Reject
	Information	xx	xx	I	C/R	Numbered Information Present

Modulus 128

Frame Format	Hex Value	Acronym	Cmd Rsp	Command Name
Super- visory Format	01xx 05xx 09xx	RR RNR REJ	C/R C/R C/R	Receive Ready Receive Not Ready Reject
Information	xxxx	I	C/R	Numbered Information Present

Link Abort 7 to 15 Contiguous Ones

Link Idle 15 or More Contiguous Ones

Link Time Fill Idle Continuous Ones
Active Continuous Flags

FRMR I-Field Response

Byte 1	Byte 2	Byte 3
Rejected C-Field	N(R) 0 N(S) 0	0 0 0 0 Z Y X W

The rejected C-field is the C-field of the frame that caused the FRMR to be transmitted.

N(S) has the value to be used in the next I-Frame to be transmitted.

N(R) has the value of N(S) in the next expected I-Frame.

Z = 1, if N(R) in the rejected C-field was illegal.

Y = 1, if the I-field was too long.
(Y = 1 implies that W = 0 and vice versa)

X = 1, if the rejected frame illegally had an I-field.
(X = 1 implies also that W = 1)

W = 1, if the rejected C-field was invalid or not implemented.

XID

XID Information Field Formats

Byte	Bit(s)	Name	Value	Description
0	0-3	XID Format	0	Fixed (bytes 0-5)
			1	Variable
			3	Variable (PU.1)
4-7	Node Type of Sender	1	2	PU.T1
			3	PU.T2/2.1
			4	PU.T4/5
			4	Variable Format Length
1	I-Field Length			Variable Format Length
2-5	Node Identification			
0-11	Block Number	ID Number		
12-31				
(End of Format 0, Format 3 Continuation)				
6-7		Reserved		
8		Characteristics of Sending Node		
0	Receipt of Init-Self	0	0	Supported
			1	Not Supported
1	Standalone BIND	0	0	No Prior INIT_SELF Req'd
			1	Prior INIT_SELF Required
2-3	Segment Assembly Capability	00	00	Mapping Field Ignored
			01	Station Level Assembly
			10	Session Level Assembly
			11	Only Whole BIUs Allowed
9-16		Reserved		
17	DLC Type	1		SDLC Normal Response Mode
18-n		DLC Dependent Section		
18		Length of DLC Dependent Section		
19		Link Station and Connection Protocol Flags		
2-3	Role of XID Sender	00	00	Secondary (nonnegotiable)
			01	Primary (nonnegotiable)
			11	Negotiable
6-7	Transmit Receive Capability			
		0	0	Two-way Alternating
			1	Two-way Simultaneous
20		Reserved		
21-22		Maximum I-Field Length		
23		SDLC Command/Response Profile		
4-7	SDLC Initialization Mode	0	0	SNA Link Set
			1	
2		0	0	SIM/RIM Not Supported
			1	SIM/RIM Supported
25-26		Reserved		
27	1-7	Maximum # Outstanding Frames	>8 = MOD 128	
28		Reserved		

FMH

FM Header Type 5: ATTACH (LU Type 6.2)

Byte	Bit	Content	Description
0		Length	Length of Header
1		5	FMH Type 5
2-3		x'02FF'	Attach Command Code
4	4	0	PIP Not Present Following FMH5
		1	PIP Present Following FMH5
Fixed Length Parameters			
5		3	Length of Fixed Length Parameters
6		x'D0'	Basic Conversation
		x'D1'	Mapped Conversation
7		Reserved	
8	0-1	00	None
		01	Confirm
		10	Syncpoint
		Variable Length Parameters	
9-p		Length of TPN	
10-k		Transaction Program Name	
k+1		Length of Access Security Info	
(k+2)-m		Security Access Code Subfields	
m+1		Length of Unit of Work Identifier	
(m+2)-n		Logical Unit of Work Identifier	
n+1		Length of LU Network Name	
(n+2)-w		Fully Qualified LU Network Name	
w+1		Unit of Work Instance Number (6)	
w+7		Unit of Work Sequence Number (2)	
x+1		Reserved	

FM Header Type 7 (LU Type 6.2)

Byte	Bit	Content	Description
0		7	Length of FMH-7
1	1-7	7	FMH Type 7
2-5			SNA Sense Code
6	0	0	Error Log GDS Variable Presence
		1	Follows

Service Transaction Program Classes

Class	Identifier (in hex)
Change Number of Sessions	06F1
Resynchronization	06F2
Distributed Data Base Management	07F0
Document Interchange Architecture	20F0
SNA Distribution Services	21F0
Product Oriented	30F0

SNA Service Transaction Program Names

Name (in hex)	Description
06F1	Change Number of Sessions
06F2	Resynchronization
07F0F0F1	Distributed Data Base Management
20F0F0F0	DIA Process Destination
20F0F0F1	DIA File Server
21F0F0F1	SNADS DS_SEND
21F0F0F2	SNADS DS_RECEIVE
21F0F0F3	SNADS DS_ROUTER_DIRECTOR
21F0F0F6	SNADS General Server
30F0F0F0	Printer CPDS for 3820
30F0F0F1	Printer Level 2 for 3820
30F0F0F3	Object Distribution for System/38
30F0F0F4	NETDATA Server for System/38
30F0F0F5	5250 Device Passthrough System/36/38
30F0F0F6	Virtual Disk for System/36/38
30F0F0F7	Virtual Printer for System/36/38

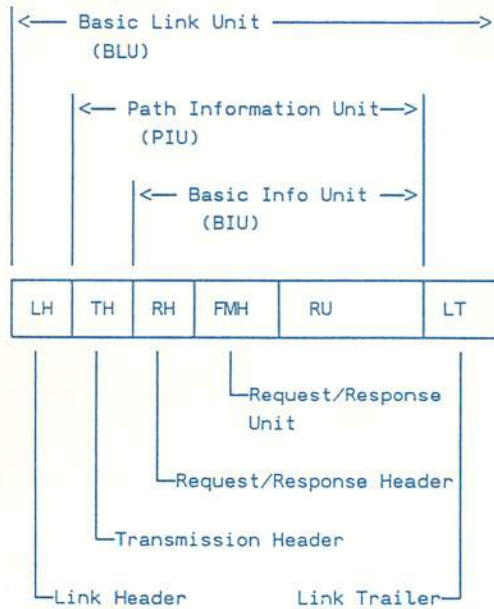
SNA

SYSTEMS NETWORK ARCHITECTURE

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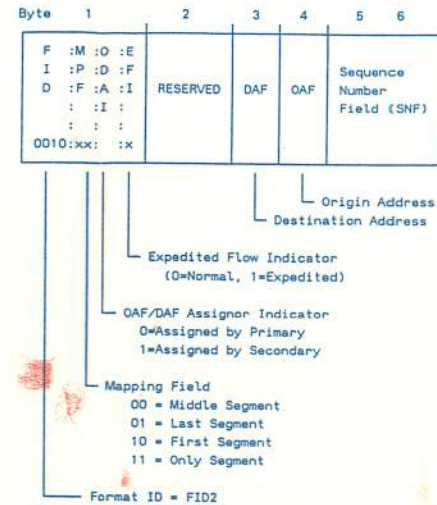


LU TYPES

Type	Description	TS Profile	FM Profile
0	Not Covered by SNA, SLU P	2,3,4,7	2,3,4,7,18
1	SNA Character String	3,4	3,4
2	3270 Data Stream Display	3	3
3	3270 Data Stream Printer	3	3
4	Word Processing, Peer to Peer	7	7
6.2	Advanced Program to Programm	1,7	0,6,19
7	5250 Data Stream	7	7

TH

PU_T2, T2.1 Transmission Header Formats



SNA Request Codes/Commands

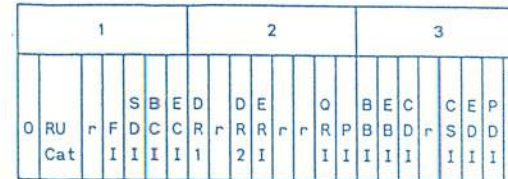
Command Code	Command Name	Data Flow	Command Type
010381	RECMS	N	FMD
010681	INIT-SELF	N	FMD
04	LUSTAT	N	DFC
05	RTR	N	DFC
0D	ACTLU	E	SC
0E	DACTLU	E	SC
11	ACTPU	E	SC
12	DACTPU	E	SC
31	BIND	E	SC
32	UNBIND	E	SC
410304	REQMS	N	FMD
70	BIS	N	DFC
71	SBI	E	DFC
80	QEC	E	DFC
810620	NOTIFY	N	FMD
810681	INIT-SELF 6.2	N	FMD
81	QC	N	DFC
82	RELO	E	DFC
83	CANCEL	N	DFC
84	CHASE	N	DFC
A0	SDT	E	SC
A1	CLEAR	E	SC
A2	STSN	N	SC
A3	ROR	E	SC
C0	SHUTD	E	DFC
C1	SHUTC	E	DFC
C2	RSHUT	N	DFC
C8	BID	N	DFC
C9	SIGNAL	E	DFC

E - Expedited Flow
N - Normal Flow
DFC - Data Flow Control
FMD - Function Management Data
SC - Session Control

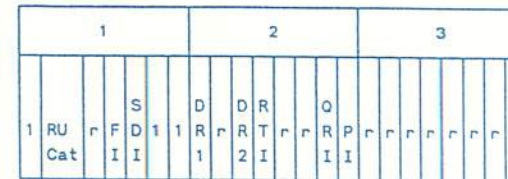
RH

Request/Response Header (RH) Formats

Request Header



Response Header



Field

Description

RU Category

00 = FM Data (FMD)
01 = Network Control (NC)
10 = Data Flow Control (DFC)
11 = Session Control (SC)

FI

Function Indicator
format for SC, NC, and DFC = 1
for FMD SSCP: 0 char coded RU
1 field formatted RU
LU-LU: 1 if FMH follows

SDI

Sense Data Included Indicator
1 = Sense Data Included

BCI

Begin Chain Indicator

ECI

End Chain Indicator

DR1

Definite Response 1 Indicator

DR2

Definite Response 2 Indicator

ERI

Exception Response Indicator

RTI

Response Type Indicator
0 = +; 1 = -

ORI

Queued Response Indicator

PI

Pacing Indicator

BBI

Begin Bracket Indicator

EBI

End Bracket Indicator

CDI

Change Direction Indicator

CSI

Code Selection Indicator

EDI

Enciphered Data Indicator

PDI

Padded Data Indicator

CEBI

Conditional End Bracket

SNA SENSE

SNA SENSE CODES

Path Error X'80'
8004 Unrecognized DAF
8005 No Session
8006 Invalid FID
8007 Segmenting Error
8008 PU Not Active
8009 LU Not Active
800B Incomplete TH
800F Invalid Address Combination
8010 Segmented RU Length Error
RH Error X'40'
4001 Invalid SC or NCRH
4003 BB Not Allowed
4004 CEB or EB Not Allowed
4006 Exception Rsp Not Allowed
4007 Definite Rsp Not Allowed
4013 Incorrect Specification of (SDI, RTI):
4015 Incorrect use of QRI
4019 Incorrect Indicators with Last-In-Chain Request
400A No Rsp Not Allowed
400F Format Indicator Not Allowed
State Error X'20'
2001 Sequence Number Error
2002 Chaining Error
2003 Bracket State Error
2004 Direction Error
2005 Data Traffic Reset
2009 FM Request Prior to CRV
2011 Pacing Protocol Error
200E Response Correlation Error
Request Error X'10'
1001 RU Data Error
1002 RU Length Error
1003 Function Not Supported
1005 Parameter Error
1007 Category Not Supported
1008 Invalid FM Header
Request Reject X'08'
0801 Resource Not Available
0802 Intervention Required
0805 Session Limit Exceeded
0806 Resource Unknown
0807 Subdry Dev Temp Unavailable
0809 Mode Inconsistency
080A Permission Rejected
080B Bracket Race Error
080C Procedure Not Supported
080F End User Not Authorized
0811 Break (LU type 1)
0813 Bracket Bid Reject (no RTR)
0814 Bracket Bid Rej (RTR to follow)
0815 Function Active
081B Receiver in Transmit Mode
0821 Invalid Session Parameters
0824 Logical Unit of Work Aborted
082A Pres Space altered, Req exec
082B Pres Space Integrity Lost
082D SLU Busy
082E Interv Req'd at Subdry Device
082F Req Not Executable (Subdry Dev)
0831 LU Component Disconnected
0843 Req'd FM Sync Not Supplied
0845 Permission Rejected
0846 ERP Message Forthcoming
084A Pres Space Altered, Req Not Exec
084B Requested Resources Not Available
084C Permanent Insufficient Resource
084D Invalid Session Parameters-BF
084E Invalid Session Parameters-PRI
0864 Function Abort
0871 Read State Error
0889 Transaction Program Error