

X025

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Reply to: Tom Jones

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Minutes of Async Sub group of X12C1

Meeting in Rockville MD. Jan. 14 and 15, 1986

ATTENDANCE

Ted Pearson	AT&T-IS
Glen Mules	Bank of America
Donald Quan	Canadian GEISCO
Glen Smith	Communications Research Group
Dan Henderson	Communications Research Group
Jim Nichols	Digital Pathways Inc
Dale Sortland	EDI Inc
Tom Buck	GTE Telenet
Larry Baird	McDonnell-Douglas
Eugene Chang	Microcom Inc.
Tom Jones - Convenor	Western DataCom

Altho only two protocols have been formally proposed to X12 (MNP and X.PC), this meeting did an extensive comparisons of four different protocols. XMODEM would only be considered if it were used with 16 bit CRC which is not currently widely available. XMODEM was eliminated on other grounds. Blast would only be considered if it were the subject of a complete proposal to X12 and placed into the public domain.

Unfortunately, even with the resolve of limiting the number of protocols to one, this group was not able to select one that could achieve consensus. It is likely that this will not be possible until either:

- 1) The market place makes its decision for us
- 2) Two or more of the competing entries come up with a joint proposal

The work on a transfer (session) protocol must continue and it is likely that this protocol could be common between async and bisync guidelines. The async group decided that all types of transaction sets must be accomodated while the bisync group was not considering two types:

- 1) The inquiry response type
- 2) The type requiring encryption

Some adjustments to the terminology used during the meeting were made in this document to come into closer agreement with the bisync sub-group.

PROTOCOL COMPARISONS

	X.PC -----	MNP ----	Blast -----	XMODEM/CRC -----
Efficiency	94%	84% or higher	84%	poor (half dux)
Error control	CRC length encoded for transparent	CRC HDLC	CRC Bit level enc for transparent	CRC not on control path
software	widest	1 co	1 co	too new
hardware	???	widest	1 co	none
212A compat	yes	yes	yes	yes
flow control	RR	credit	soft???	Ack/Nak
packet size	neg 256	neg 64/256	neg 512	120
window size	neg 15	neg 256	neg 16	1
protocol	invoc by command	negot. parameters	negot. old/new	CS or CRC Mand CRC
piggy-back on network	yes	yes-async	yes optimized	yes
multi channel	yes	future	no	no
extensibility	future	yes	yes	no

neg = negotiated

This list was designed to eliminate protocols until only one remained. Unfortunately, only XMODEM was eliminated.

## X12 ASYNC PROTOCOL MODEL

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After reviewing all possible layers that might be useful in an X12 interchange, only the transfer (session) layer and an error (line) control layer were identified as important. The transfer (session) layer may have sublayers if it is to be connection oriented and the checkpoints are taken (data is committed) only at session completion. The problem with accepting only complete sessions is that it prevents inquiry-response transaction sets such as X12 has already defined.

### TRS (Transfer related - Session) layer

- Signon (Request and Confirm)
  - Amount of data
  - Checkpoint - at ISA/ISE
    - at signoff (TA2 required??)
  - Communication responsibility - 0 = Send only
    - 1 = Rec only
    - 2 = Turn possible
- Send / Receive Data (ISA/ISE - TA1)
- Signoff (Request and Confirm)

### LCS (Error - Line control) layer

- Connection is Async
  - Window size (1-8)
  - Data Packet size (64-256)
  - Protocol selection (old/new - async/sync)
    - This could be the escape that makes one standard possible
  - Extensibility
    - Compression
    - Encryption-Identification
- Renegotiation
  - Line speed
  - Encryption/Security

### Physical layer

- must support 212A modem - could negotiate alternate at connection time

## MANAGEMENT ISSUES

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### Axioms - Guidelines MUST comply with these issues

Ability to certify actual implementations  
This group wishes X12 to actively promote an X12 directory  
Quality - any protocol must reject 99.99% of induced errors  
Recovery - At ISA/ISE level only  
TRS protocol - must try for only one for both async and bisync  
LCS - only two protocols - async and bisync (for now)  
Connection - must be flexible enough to negotiate environment  
Code sets - always ASCII for Async and EBCDIC for bisync  
Transparency of data - must allow for encrypted data  
Code set for envelope around data - (from ISA to ISE)  
Envelope must be able to be translated  
ISE must be on a block boundary  
Availability - times are published in directory  
- must answer 90% of all calls during busiest hour

### Pre-Connect - Issues decided prior to any communication

Registration Authority - Directory Keeper  
Directory must map names into addresses  
Directory is Electronic - nice, not required  
Directory Information to include  
Availability of user (eg. 9-5 workdays)  
modem type (& speed)  
security requirements (possibly by transaction type)  
transaction set that are accepted  
amount of data that can be accepted  
cost - will user accept collect calls  
Retransmission  
How long is message available (3 working days)  
How soon could retransmission be made (1 day)  
How soon is TA1 response expected (1 day)

### Connect - Issues negotiated at connect time

Time to deliver  
Request confirmation (TA1 or lower?)  
Security - Authentication or encryption  
- 0 = No, 1 = Try, 2 = Required  
Responsibility - default to initiator  
- could use token to transfer  
- send only / Receive only  
Amount of data - relates to free space of receiver  
256K bytes is default