



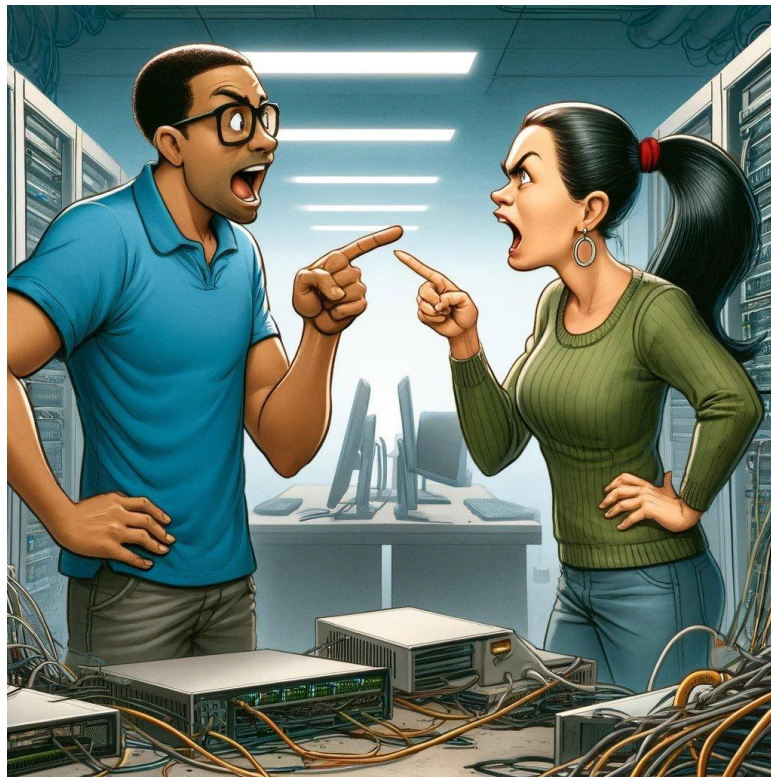
10G 40G 100G PACKET CAPTURE

Diagnosing network weirdness

He said, She said, Layer 1 capture said!

Aaron Foo - CEO, FMADIO

It's Broken



Network issues:

- “Weird” errors
- Link bounces
- Port flapping
- Link is down
- Unexpected errors

“It’s Broken”

There is an “Error”

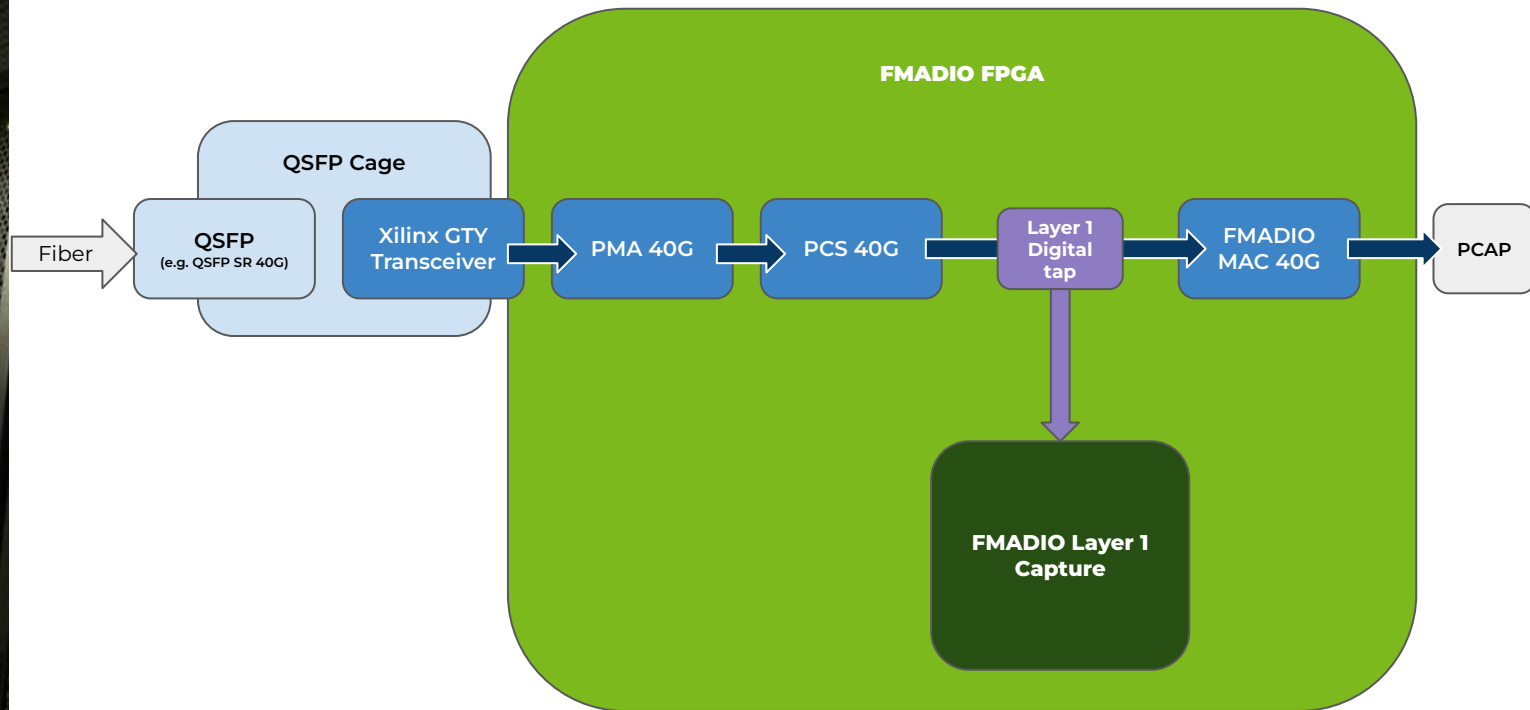
Ok... so there's a problem. You checked the error counters. Found a 1 when it should be a 0, but... what's next?

```
(fmadiosg0-tor720) #show interface 0/26

Packets Received Without Error..... 11648276
Packets Received With Error..... 1
Broadcast Packets Received..... 26661
Receive Packets Discarded..... 2
Packets Transmitted Without Errors..... 201509907
Transmit Packets Discarded..... 0
Transmit Packet Errors..... 0
Collision Frames..... 0
Number of link down events..... 184
Load Interval..... 300
Bits Per Second Received..... 0
Bits Per Second Transmitted..... 80
Packets Per Second Received..... 0
Packets Per Second Transmitted..... 0
Percent Utilization Received..... 0%
Percent Utilization Transmitted..... 0%
Link Flaps..... 0
Time Since Counters Last Cleared..... 89 day 23 hr 15 min 26 sec

(fmadiosg0-tor720) #
```

XLGMII Debugging



Investigating a corrupt FCS

```

066:081:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:a8309a3ea9309a3e_aa309a3eab309a3e
065:082:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:ac309a3ead309a3e_ae309a3eaf309a3e
064:083:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b0309a3eb1309a3e_b2309a3eb3309a3e
063:084:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b4309a3eb5309a3e_b6309a3eb7309a3e
062:085:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b8309a3eb9309a3e_ba309a3ebb309a3e
061:086:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:bc309a3ebd309a3e_be309a3ebf309a3e
060:087:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c0309a3ec1309a3e_c2309a3ec3309a3e
059:088:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c4309a3ec5309a3e_c6309a3ec7309a3e
058:089:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c8309a3ec9309a3e_ca309a3ecb309a3e
057:08a:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:cc309a3ecd309a3e_ce309a3ecf309a3e
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055:08c:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:d4309a3ed5309a3e_d6309a3ed7309a3e
054:08d:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:d8309a3ed9309a3e_da309a3edb309a3e
053:08e:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:dc309a3edd309a3e_de309a3edf309a3e
052:08f:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e0309a3ee1309a3e_e2309a3ee3309a3e
051:090:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e4309a3ee5309a3e_e6309a3ee7309a3e
050:091:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e8309a3ee9309a3e_ea309a3eeb309a3e
049:092:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:ec309a3eed309a3e_ee309a3eedf309a3e
048:093:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:f0309a3ef1309a3e_f2309a3ef3309a3e
047:094:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:f4309a3ef5309a3e_f6309a3ef7309a3e
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042:099:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:08319a3e09319a3e_0a319a3e0b319a3e
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037:09e:009 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:1c319a3e1d319a3e_1e319a3e1f319a3e
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029:0a6:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:00af2002010000af_2002020000000000
028:0a7:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c22f9a3ec32f9a3e_c42f9a3ec52f9a3e
027:0a8:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c62f9a3ec72f9a3e_c82f9a3ec92f9a3e
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009:0ba:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:0e309a3e0f309a3e_10309a3e11309a3e
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003:0c0:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:26309a3e27309a3e_28309a3e29309a3e
002:0c1:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:2a309a3e2b309a3e_2c309a3e2d309a3e
001:0c2:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:2e309a3e2f309a3e_30309a3e31309a3e

```


Investigating a corrupt FCS

066:081:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:a8309a3ea9309a3e_aa309a3eab309a3e	
065:082:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:ac309a3ead309a3e_ae309a3eaf309a3e	
064:083:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:b0309a3eb1309a3e_b2309a3eb3309a3e	
063:084:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:b4309a3eb5309a3e_b6309a3eb7309a3e	
062:085:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:b8309a3eb9309a3e_ba309a3ebb309a3e	
061:086:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:bc309a3ebd309a3e_be309a3ebf309a3e	
060:087:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:c0309a3ec1309a3e_c2309a3ec3309a3e	
059:088:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:c4309a3ec5309a3e_c6309a3ec7309a3e	
058:089:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:c8309a3ec9309a3e_ca309a3ecb309a3e	
057:08a:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:cc309a3ecd309a3e_ce309a3ecf309a3e	
056:08b:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:d0309a3ed1309a3e_d2309a3ed3309a3e	
055:08c:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:d4309a3ed5309a3e_d6309a3ed7309a3e	
054:08d:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:d8309a3ed9309a3e_da309a3edb309a3e	
053:08e:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:dc309a3edd309a3e_de309a3edf309a3e	
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051:090:008	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:e4309a3ee5309a3e_e6309a3ee7309a3e	
050:091:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:e8309a3ee9309a3e_ea309a3eeb309a3e	
049:092:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:ec309a3eed309a3e_ee309a3eed309a3e	
048:093:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:f0309a3ef1309a3e_f2309a3ef3309a3e	
047:094:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:f4309a3ef5309a3e_f6309a3ef7309a3e	
046:095:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:f8309a3ef9309a3e_fa309a3efb309a3e	
045:096:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:fc309a3efd309a3e_fe309a3efd309a3e	
044:097:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:00319a3e01319a3e_02319a3e03319a3e	
043:098:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:04319a3e05319a3e_06319a3e07319a3e	
042:099:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:08319a3e09319a3e_0a319a3e0b319a3e	
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039:09c:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:14319a3e15319a3e_16319a3e17319a3e	
038:09d:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:18319a3e19319a3e_1a319a3e1b319a3e	
037:09e:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:1c319a3e1d319a3e_1e319a3e1f319a3e	
036:09f:009	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:20319a3e21319a3e_22319a3e23319a3e	
035:0a0:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:24319a3e25319a3e_26319a3e27319a3e	
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032:0a3:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:30319a3e31319a3e_32319a3e33319a3e	
031:0a4:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:389ec9a26620ef6d_1dcfd03c21d6931e	
030:0a5:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000111110000000	Dat:c7d5cof2fd070707_fb555555555555d5	-----T1115-----
029:0a6:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:00af2002010000af_2002020000000000	
028:0a7:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:c22f9a3ec32f9a3e_c42f9a3ec52f9a3e	
027:0a8:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:c62f9a3ec72f9a3e_c82f9a3ec92f9a3e	
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024:0ab:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:d22f9a3ee92f9a3e_d42f9a3eed2f9a3e	
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021:0ae:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:de2f9a3ee12f9a3e_e02f9a3ee12f9a3e	
020:0af:00a	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:e22f9a3ee32f9a3e_e42f9a3ee52f9a3e	
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015:0b4:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:f62f9a3ee72f9a3e_f82f9a3ee92f9a3e	
014:0b5:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:fa2f9a3ee12f9a3e_fc2f9a3ee12f9a3e	
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012:0b7:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:02309a3e03309a3e_04309a3e05309a3e	
011:0b8:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:06309a3e07309a3e_08309a3e09309a3e	
010:0b9:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:0a309a3e0b309a3e_0c309a3e0d309a3e	
009:0ba:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:0e309a3e0f309a3e_10309a3e11309a3e	
008:0bb:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:12309a3e13309a3e_14309a3e15309a3e	
007:0bc:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:16309a3e17309a3e_18309a3e19309a3e	
006:0bd:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:1a309a3e1b309a3e_1c309a3e1d309a3e	
005:0be:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:1e309a3e1f309a3e_20309a3e21309a3e	
004:0bf:00b	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:22309a3e23309a3e_24309a3e25309a3e	
003:0c0:00c	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:26309a3e27309a3e_28309a3e29309a3e	
002:0c1:00c	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:2a309a3e2b309a3e_2c309a3e2d309a3e	
001:0c2:00c	Rep:000001	PCSErr:	FCS:	InFrame:F	XLGMII:	Ctl:0000000000000000	Dat:2e309a3e2f309a3e_30309a3e31309a3e	

FCS:
FCS:
FCS:

Investigating a corrupt FCS

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066:081:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:a8309a3ea9309a3e_aa309a3eab309a3e
065:082:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:ac309a3ead309a3e_ae309a3ear309a3e
064:083:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b0309a3eb1309a3e_b2309a3eb309a3e
063:084:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b4309a3eb5309a3e_b6309a3eb7309a3e
062:085:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:b8309a3eb9309a3e_ba309a3ebb309a3e
061:086:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:bc309a3ebd309a3e_be309a3ebf309a3e
060:087:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c0309a3ec1309a3e_c2309a3ec3309a3e
059:088:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c4309a3ec5309a3e_c6309a3ec7309a3e
058:089:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:c8309a3ec9309a3e_ca309a3ecb309a3e
057:08a:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:cc309a3ecd309a3e_ce309a3ecf309a3e
056:08b:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:d0309a3ed1309a3e_d2309a3ed3309a3e
055:08c:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:d4309a3ed5309a3e_d6309a3ed7309a3e
054:08d:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:d8309a3ed9309a3e_da309a3edb309a3e
053:08e:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:dc309a3edd309a3e_de309a3edf309a3e
052:08f:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e0309a3ee1309a3e_e2309a3ee3309a3e
051:090:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e4309a3ee5309a3e_e6309a3ee7309a3e
050:091:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:e8309a3ee9309a3e_ea309a3eeb309a3e
049:092:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:ec309a3eed309a3e_ee309a3eeef309a3e
048:093:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:f0309a3ef1309a3e_f2309a3ef3309a3e
047:094:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:f4309a3ef5309a3e_f6309a3ef7309a3e
046:095:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:f8309a3ef9309a3e_fa309a3efb309a3e
045:096:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:fc309a3ef309a3e_fe309a3ef7309a3e
044:097:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:00319a3e01319a3e_02319a3e03319a3e
043:098:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:04319a3e05319a3e_06319a3e07319a3e
042:099:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:08319a3e09319a3e_0a319a3e0b319a3e
041:09a:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:0c319a3e0d319a3e_0e319a3e0f319a3e
040:09b:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:10319a3e11319a3e_12319a3e13319a3e
039:09c:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:14319a3e15319a3e_16319a3e17319a3e
038:09d:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:18319a3e19319a3e_1a319a3e1b319a3e
037:09e:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:1c319a3e1d319a3e_1e319a3e1f319a3e
036:09f:008 Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:20319a3e21319a3e_22319a3e23319a3e
035:0a0:00a Rep:00
034:0a1:00a Rep:00
033:0a2:00a Rep:00
032:0a3:00a Rep:00
031:0a4:00a Rep:00
030:0a5:00a Rep:00
029:0a6:00a Rep:00
028:0a7:00a Rep:00
027:0a8:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:30319a3e31319a3e_32319a3e33319a3e
026:0a9:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:34319a3e35319a3e_36319a3e37319a3e
025:0aa:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:38319a3e39319a3e_3a319a3eb3319a3e
024:0ab:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:3c319a3ebd319a3e_3e319a3ebf319a3e
023:0ac:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:40319a3ec1319a3e_42319a3ec3319a3e
022:0ad:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:44319a3ec5319a3e_46319a3ec7319a3e
021:0ae:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:48319a3ec9319a3e_4a319a3ecb319a3e
020:0af:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:4c319a3ecd319a3e_4e319a3ecf319a3e
019:0b0:00a Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:50319a3eed319a3e_52319a3eed5319a3e
018:0b1:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:54319a3eed7319a3e_56319a3eed9319a3e
017:0b2:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:58319a3eedb319a3e_5a319a3eedd319a3e
016:0b3:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:5c319a3eedf319a3e_5e319a3eeef319a3e
015:0b4:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:60319a3ee1319a3e_62319a3ee3319a3e
014:0b5:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:64319a3ee5319a3e_66319a3ee7319a3e
013:0b6:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:68319a3ee9319a3e_6a319a3eeb319a3e
012:0b7:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:6c319a3eed319a3e_6e319a3eed5319a3e
011:0b8:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:70319a3eed7319a3e_72319a3eed9319a3e
010:0b9:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:74319a3eedb319a3e_76319a3eedd319a3e
009:0ba:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:78319a3eedf319a3e_7a319a3eeef319a3e
008:0bb:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:7c319a3ef1319a3e_7e319a3ef3319a3e
007:0bc:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:80319a3ef5319a3e_82319a3ef7319a3e
006:0bd:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:84319a3ef9319a3e_86319a3efb319a3e
005:0be:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:88319a3ef3319a3e_8a319a3ef5319a3e
004:0bf:00b Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:8c319a3ef7319a3e_8e319a3ef9319a3e
003:0c0:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:90319a3efb319a3e_92319a3efd319a3e
002:0c1:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:94319a3eff319a3e_96319a3eff5319a3e
001:0c2:00c Rep:000001 PCSerr: FCS: InFrame:F XLGMI: Ctl:0000000000000000 Dat:98319a3ef3319a3e_9a319a3ef5319a3e

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Investigating a corrupt FCS

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5: 046: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 1111111111111111 Dat: 0707070707070707_0707070707070707 1111111111111111
4: 047: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 1000000000000000 Dat: fb55555555555555_00af2002010000af S-----
3: 048: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: 2002020000000000_c22f9a3ec32f9a3e
2: 049: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: c42f9a3ec52f9a3ec62f9a3ec72f9a3e
1: 04A: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: c82f9a3ec92f9a3eca2f9a3ecb2f9a3e
0: 04B: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: cc2f9a3ecd2f9a3ec2f9a3ec2f9a3e
9: 04C: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: d02f9a3ed12f9a3ed2f9a3ed3f9a3e
8: 04D: 004] Rep: 000001 PCSerr: FCS: InFrame: XLGMII: Ctl: 0000000000000000 Dat: d42f9a3ed52f9a3ed6f9a3ed7f9a3e
7: 04E: 004] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: d82f9a3ed92f9a3eda2f9a3edb2f9a3e
6: 04F: 004] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: dc2f9a3edd2f9a3ede2f9a3edf2f9a3e
5: 050: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: e02f9a3ee12f9a3ee2f9a3ee3f9a3e
4: 051: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: e42f9a3ee52f9a3ee6f9a3ee7f9a3e
3: 052: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: e82f9a3ee92f9a3eea2f9a3eeb2f9a3e
2: 053: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: ec2f9a3eed2f9a3eedf9a3eeef2f9a3e
1: 054: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: f02f9a3ef12f9a3ef2f9a3ef3f9a3e
0: 055: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: f42f9a3ef52f9a3ef6f9a3ef7f9a3e
9: 056: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: f82f9a3ef92f9a3efa2f9a3efb2f9a3e
8: 057: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: fc2f9a3eff2f9a3efff9a3efff2f9a3e
7: 058: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 00309a3e01309a3e02309a3e03309a3e
6: 059: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 04309a3e05309a3e06309a3e07309a3e
5: 05A: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 08309a3e09309a3e0a309a3e0b309a3e
4: 05B: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 0C309a3e0d309a3e0e309a3e0f309a3e
3: 05C: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 10309a3e11309a3e12309a3e13309a3e
2: 05D: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 14309a3e15309a3e16309a3e17309a3e
1: 05E: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 18309a3e19309a3e1a309a3e1b309a3e
0: 05F: 005] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 1C309a3e1d309a3e1e309a3e1f309a3e
9: 060: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 20309a3e21309a3e22309a3e23309a3e
8: 061: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 24309a3e25309a3e26309a3e27309a3e
7: 062: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 28309a3e29309a3e2a309a3e2b309a3e
6: 063: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 2C309a3e2d309a3e2e309a3e2f309a3e
5: 064: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 30309a3e31309a3e32309a3e33309a3e
4: 065: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 34309a3e35309a3e36309a3e37309a3e
3: 066: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 38309a3e39309a3e3a309a3e3b309a3e
2: 067: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 3C309a3e3d309a3e3e309a3e3f309a3e
1: 068: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 40309a3e41309a3e42309a3e43309a3e
0: 069: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 44309a3e45309a3e46309a3e47309a3e
9: 06A: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 48309a3e49309a3e4a309a3e4b309a3e
8: 06B: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 4C309a3e4d309a3e4e309a3e4f309a3e
7: 06C: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 50309a3e51309a3e52309a3e53309a3e
6: 06D: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 54309a3e55309a3e56309a3e57309a3e
5: 06E: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 58309a3e59309a3e5a309a3e5b309a3e
4: 06F: 006] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 5C309a3e5d309a3e5e309a3e5f309a3e
3: 070: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 60309a3e61309a3e62309a3e63309a3e
2: 071: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 64309a3e65309a3e66309a3e67309a3e
1: 072: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 68309a3e69309a3e6a309a3e6b309a3e
0: 073: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 6C309a3e6d309a3e6e309a3e6f309a3e
9: 074: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 70309a3e71309a3e72309a3e73309a3e
8: 075: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 74309a3e75309a3e76309a3e77309a3e
7: 076: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 78309a3e79309a3e7a309a3e7b309a3e
6: 077: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 7C309a3e7d309a3e7e309a3e7f309a3e
5: 078: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 80309a3e81309a3e82309a3e83309a3e
4: 079: 007] Rep: 000001 PCSerr: FCS: InFrame: F XLGMII: Ctl: 0000000000000000 Dat: 84309a3e85309a3e86309a3e87309a3e
```


Investigating a corrupt FCS

Expected: 0x9a3e
Captured: 0x9a2e
One bit flipped 1->0

Expected: 0x9a3e
Captured: 0xda3e
One bit flipped 0->1

The image displays a Wireshark packet capture of a corrupted FCS (Frame Check Sequence) field. The packet list on the left shows a series of packets, with the 106th packet (0x000001) selected. The packet details pane on the right shows the FCS field (FCS: InFrame: F) with a value of 0xda3e. A red box highlights the FCS field, and a red arrow points to the corresponding data in the packet bytes pane. The expected FCS value is 0x9a3e, but the captured value is 0xda3e, indicating a one-bit flip (0 to 1).

055: 14b: 014	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: a58acbf8758acbf8_c58acbf8758acbf8
054: 14c: 014	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 7e58acbf87f58acbf8_8058acbf88158acbf8
053: 14d: 014	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 8258acbf88358acbf8_8458acbf88558acbf8
052: 14e: 014	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 8658acbf88758acbf8_8858acbf88958acbf8
051: 14f: 014	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 8a58acbf88b58acbf8_8c58acbf88d58acbf8
050: 150: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 8e58acbf88f58acbf8_9058acbf89158acbf8
049: 151: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 9258acbf89358acbf8_9458acbf89558acbf8
048: 152: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 9658acbf89758acbf8_9858acbf89958acbf8
047: 153: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 9a58acbf89b58acbf8_9c58acbf89d58acbf8
046: 154: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 9e58acbf89f58acbf8_a058acbf8a158acbf8
045: 155: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: a258acbf8a358acbf8_a458acbf8a558acbf8
044: 156: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: a658acbf8a758acbf8_a858acbf8a958acbf8
043: 157: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: aa58acbf8ab58acbf8_ac58acbf8ad58acbf8
042: 158: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ae58acbf8af58acbf8_b058acbf8b158acbf8
041: 159: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: b258acbf8b358acbf8_b458acbf8b558acbf8
040: 15a: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: b658acbf8b758acbf8_b858acbf8b958acbf8
039: 15b: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ba58acbf8bb58acbf8_bc58acbf8bd58acbf8
038: 15c: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: be58acbf8bf58acbf8_c058acbf8c158acbf8
037: 15d: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: c258acbf8c358acbf8_c458acbf8c558acbf8
036: 15e: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: c658acbf8c758acbf8_c858acbf8c958acbf8
035: 15f: 015	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ca58acbf8cb58acbf8_cc58acbf8cd58acbf8
034: 160: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ce58acbf8cf58acbf8_d058acbf8d158acbf8
033: 161: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: d258acbf8d358acbf8_d458acbf8d558acbf8
032: 162: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: d658acbf8d758acbf8_d858acbf8d958acbf8
031: 163: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: da58acbf8db58acbf8_dc58acbf8dd58acbf8
030: 164: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: de58acbf8df58acbf8_e058acbf8e158acbf8
029: 165: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: e258acbf8e358acbf8_e458acbf8e558acbf8
028: 166: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: e658acbf8e758acbf8_e858acbf8e958acbf8
027: 167: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ea58acbf8eb58acbf8_ec58acbf8ed58acbf8
026: 168: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: ee58acbf8ef58acbf8_f058acbf8f158acbf8
025: 169: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: f258acbf8f358acbf8_f458acbf8f558acbf8
024: 16a: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: f658acbf8f758acbf8_f858acbf8f958acbf8
023: 16b: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: fa58acbf8fb58acbf8_fc58acbf8fd58acbf8
022: 16c: 016	Rep: 000001	PCSErr: FCS:	InFrame: F	XLGMII: Ctl: 0000000000000000	Dat: 8b6ee0016620adb0_01b9574121d6931e
021: 16d: 016	Rep: 000				

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```
[027:167:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:ee58acf8ef58acf8_f058acf8f158acf8 :-----
[026:168:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f258acf8f358acf8_f458acf8f558acf8 :-----
[025:169:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f658acf8f758acf8_f858acf8f958acf8 :-----
[024:16a:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:fA58acf8fb58acf8_fc58acf8fd58acf8 :-----
[023:16b:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:8b6ee8016620adbd_01b9574121d6931e :-----Tiiis-----
[022:16c:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000111110000000 Dat:f98d7374fd070707_fb55555555555555 :-----Tiiis-----
[021:16d:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:270800ca280800ca_290800ca0039d9b7 :-----
[020:16e:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f06620adbd01b957_4101d6930ea332f6 :-----
[019:16f:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:fefefefefefefefefefef_fdf07070707070707 : EEEEEEEETiiiiii
[018:170:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:fb55555555555555d5_00af2002010000af : S-----
[017:171:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:2002020000000000_8c57acf88d57acf8 :-----
[016:172:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:9257acf89357acf8_9457acf89557acf8 :-----
[015:173:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:9657acf89757acf8_9857acf89957acf8 :-----
[014:174:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:9a57acf89b57acf8_9c57acf89d57acf8 :-----
[013:175:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:9e57acf89f57acf8_a057acf8a157acf8 :-----
[012:176:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:a257acf8a357acf8_a457acf8a557acf8 :-----
[011:177:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:a657acf8a757acf8_a857acf8a957acf8 :-----
[010:178:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:aa57acf8ab57acf8_ac57acf8ad57acf8 :-----
[009:179:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:ae57acf8af57acf8_b057acf8b157acf8 :-----
[008:17a:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f98d7374fd070707_fb55555555555555 :-----Tiiis-----
[007:17b:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:00af2003010000af_2003020000000000 :-----
[006:17c:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:1f0800ca200800ca_210800ca220800ca :-----
[005:17d:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:230800ca240800ca_250800ca260800ca :-----
[004:17e:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:270800ca280800ca_290800ca0039d9b7 :-----
[003:17f:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f06620adbd01b957_4101d6930ea332f6 :-----
[002:180:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:fefefefefefefefefefef_fdf07070707070707 : EEEEEEEETiiiiii
[001:181:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:fb55555555555555d5_00af2002010000af : S-----
[000:182:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:2002020000000000_8c57acf88d57acf8 :-----
```

FCS:
FCS:X
FCS:

```
[027:167:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000111110000000 Dat:f98d7374fd070707_fb55555555555555 :-----Tiiis-----
[021:16d:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:00af2003010000af_2003020000000000 :-----
[020:16e:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:1f0800ca200800ca_210800ca220800ca :-----
[019:16f:016] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:230800ca240800ca_250800ca260800ca :-----
[018:170:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:270800ca280800ca_290800ca0039d9b7 :-----
[017:171:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:f06620adbd01b957_4101d6930ea332f6 :-----
[016:172:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:1111111110000000 Dat:fefefefefefefefefefef_fdf07070707070707 : EEEEEEEETiiiiii
[015:173:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:1000000000000000 Dat:fb55555555555555d5_00af2002010000af : S-----
[014:174:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:2002020000000000_8c57acf88d57acf8 :-----
[013:175:017] Rep:000001 PCSerr: FCS: InFrame:F XLGMII: Ct1:0000000000000000 Dat:8e57acf88f57acf8_9057acf89157acf8 :-----
```

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48.2.4 Ordered_sets and special code-groups

10GBASE-X PCS ordered_sets consist of combinations of special and data code-groups (defined as a column of code-groups). All ordered_sets are four code-groups in length and begin in lane 0. In addition to ordered_sets, the PCS defines several special code-groups for control purposes. Ordered_sets and special code-groups provide the following capabilities:

- a) PCS Synchronization process ability to obtain bit and code-group synchronization
- b) Packet delineation
- c) Synchronization between the transmitter and receiver circuits at opposite ends of a link
- d) Deskew of received code-groups from all serial lanes to an alignment pattern
- e) Clock rate compensation protocol
- f) Link status reporting protocol
- g) Column fill
- h) Error indication

Table 48–4 lists the defined ordered_sets and special code-groups.

Table 48–2—XGMII character to PCS code-group mapping

XGMII TXC	XGMII TXD	PCS code-group	Description
0	00 through FF	Dxx.y	Normal data transmission
1	07	K28.0 or K28.3 or K28.5	Idle in [I]
1	07	K28.5	Idle in [T]
1	9C	K28.4	Sequence
1	FB	K27.7	Start
1	FD	K29.7	Terminate
1	FE	K30.7	Error
1	Other value in Table 36-2	See Table 36-2	Reserved XGMII character
1	Any other value	K30.7	Invalid XGMII character

NOTE—Values in TXD column are in hexadecimal.

171:0d:00f:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200301000000000000	f30700caf40700ca	
170:0d8:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f50700caf40700ca	f700700caf80700ca	
169:0d9:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f90700caf40700ca	fbb0700caf80700ca	
168:0da:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f0d700ca0a427c8	f6d620adbd01b956	
167:0db:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000111111	Date:2c01d6930d400301	faF0d70707070707	T1111111
166:0dc:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f055555555555555	00af20030200000af	S-----
165:0dd:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200302000000000000	f30700caf40700ca	
164:0de:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f50700caf40700ca	f70700caf80700ca	
163:0df:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f90700caf40700ca	fbb0700caf80700ca	
162:0e0:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:f0d700ca00f4305	d16620adbd01b956	
159:0e7:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200302000000000000	f30700caf40700ca	
160:0e2:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:100000000000000000	Date:f055555555555555	00af20030200000af	S-----
159:0e3:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200302000000000000	f0700caff0700ca	
158:0e4:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:000800ca10800ca	020800ca30800ca	
157:0e5:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:040800ca050800ca	060800ca070800ca	
156:0e6:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:080800ca0653620	086020adbd01b956	
155:0e7:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:2c01d6930d400301	faF0d70707070707	T1111111
154:0e8:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:100000000000000000	Date:f055555555555555	00af20030200000af	S-----
153:0e9:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200301000000000000	f0700caff0700ca	
152:0ea:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:000800ca10800ca	020800ca30800ca	
151:0eb:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:040800ca050800ca	060800ca070800ca	
150:0ec:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:080800ca003d52ed	c26620adbd01b956	
149:0ed:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:2c01d6930d400301	faF0d70707070707	T1111111
148:0ee:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:100000000000000000	Date:f055555555555555	00af20030200000af	S-----
147:0ef:00e	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:200301000000000000	090800ca0a800ca	
146:0fo:00f	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:0b0800ca0c0800ca	0d0800ca0e0800ca	
145:0f1:00f	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:0f0800ca100800ca	110800ca120800ca	
144:0f2:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000000000	Date:130800ca044ed3b	c36620adbd01b956	
143:0f3:000001	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:000000000000111111	Date:2c01d6930d400301	faF0d70707070707	T1111111
142:0f4:00f	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI:	Ct1:100000000000000000	Date:f055555555555555	00af20030200000af	S-----
141:0f5:00d	Rep:000001	PCSErr:	FCs:	InFrame:F	XLGWI				

[illegible]

[illegible]

[illegible]

```
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:0e58ac8f80758ac8_1058ac8f81158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:1258ac8f81358ac8_1458ac8f81558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:1658ac8f81758ac8_1858ac8f81958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:1a58ac8f81b58ac8_1c58ac8f81d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:1e58ac8f81f58ac8_2058ac8f82158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:2258ac8f82358ac8_2458ac8f82558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:2658ac8f82758ac8_2858ac8f82958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:2a58ac8f82b58ac8_2c58ac8f82d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:2e58ac8f82f58ac8_3058ac8f83158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:3258ac8f83358ac8_3458ac8f83558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:3658ac8f83758ac8_3858ac8f83958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:3a58ac8f83b58ac8_3c58ac8f83d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:3e58ac8f83f58ac8_4058ac8f84158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:4258ac8f84358ac8_4458ac8f84558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:4658ac8f84758ac8_4858ac8f84958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:4a58ac8f84b58ac8_4c58ac8f84d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:4e58ac8f84f58ac8_5058ac8f85158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:5258ac8f85358ac8_5458ac8f85558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:5658ac8f85758ac8_5858ac8f85958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:5a58ac8f85b58ac8_5c58ac8f85d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:5e58ac8f85f58ac8_6058ac8f86158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:6258ac8f86358ac8_6458ac8f86558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:6658ac8f86758ac8_6858ac8f86958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:6a58ac8f86b58ac8_6c58ac8f86d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:6e58ac8f86f58ac8_7058ac8f87158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:7258ac8f87358ac8_7458ac8f87558ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:7658ac8f87758ac8_7858ac8f87958ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:7a58ac8f87b58ac8_7c58ac8f87d58ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:7e58ac8f87f58ac8_8058ac8f88158ac8f
ep:00000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000000000000000000 Dat:8258ac8f88358ac8_8458ac8f88558ac8f
```

[illegible]

Hunting the Packet of Death

```
[026:168:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:f238acf8f538acf8_f438acf8f538acf8 :
[025:169:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:f658acf8f758acf8_f858acf8f958acf8 :
[024:16a:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:fa58acf8fb58acf8_fc58acf8fd58acf8 :
[023:16b:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:8b6ee8016620adbd_01b9574121d6931e :
[022:16c:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:000011111100000000 Dat:f98d7374fd070707_fb555555555555d5 : -Tiii-
[021:16d:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:00af2003010000af_2003020000000000 :
[020:16e:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:1f0800ca200800ca_210800ca220800ca :
[019:16f:016] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:230800ca240800ca_250800ca260800ca :
[018:170:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:270800ca280800ca_290800ca0039d9b7 :
[017:171:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:f06620adbd01b957_4101d6930ea332f6 :
[016:172:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:1111111111111111 Dat:fefefefefefefefe_fd07070707070707 : EEEEEETiiiiiii
[015:173:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:1000000000000000 Dat:fb555555555555d5_00af2002010000af : S-----
[014:174:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:2002020000000000_8c57acf88d57acf8 :
[013:175:017] Rep:000001 PCSErr: FCS: InFrame:F XLGMII: Ctl:0000000000000000 Dat:8e57acf88f57acf8_9057acf89157acf8 :
```


No ~~PCAP~~-L1 Trace, No Comment

Our company motto applies at the Layer 1 Level also!



Stickers Available!


```
State
  bram_index      : 0
  enable          : 0
  trigger         : 1
  zerodata        : 0
  trigger_disable : 0

  trigger_run     : 0
  trigger_over    : 0
  trigger_fcseerr : 0
  trigger_sanitiz : 0
  trigger_framerr : 0
  trigger_pcseerr : 0
  trigger_pcsother : 0
  trigger_pcscsop : 0
  trigger_pcscsop_err : 0
  trigger_pcseop  : 1
  trigger_back2back : 0
  trigger_debug   : 0

  trigger_enb_run : 0
  trigger_enb_over : 0
  trigger_enb_fcseerr : 0
  trigger_enb_sanitiz : 0
  trigger_enb_framerr : 0
  trigger_enb_pcseerr : 0
  trigger_enb_pcsother : 0
  trigger_enb_pcscsop : 0
  trigger_enb_pcscsop_err : 0
  trigger_enb_pcseop  : 1
  trigger_enb_back2back : 0
  trigger_enb_debug   : 0
```

```

XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
XLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
VLGMII: Ctl:11111111_11111111 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 1 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 1 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0022222222220066_6666666600000000 : -----
          : 0 Dat:000000ca010000ca_020000ca030000ca : -----
          : 0 Dat:040000ca050000ca_060000ca070000ca : -----
          : 0 Dat:080000ca090000ca_0a0000caf4ab0879 : -----
e         : 0 Dat:fd07070707070707_0707070707070707 : Tiiiiiiiiiiiiiii
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
r         : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
err        : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
          : 1 Dat:fefefefefefefefefe_0022222222220066 : EEEEEEE-----
ck         : 0 Dat:6666666600000000_0b0000ca0c0000ca : -----
          : 0 Dat:0d0000ca0e0000ca_0f0000ca100000ca : -----
          : 0 Dat:110000ca120000ca_130000ca140000ca : -----
t         : 0 Dat:150000ca187ac87_fd07070707070707 : -----Tiiiiiii
r         : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
err        : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
itize      : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111
merr       : 0 Dat:0707070707070707_0707070707070707 : 1111111111111111

```

Forget the SOP?

Table 48-2—XGMII character to PCS code-group mapping

XGMII TXC	XGMII TXD	PCS code-group	Description
0	00 through FF	Dxx.y	Normal data transmission
1	07	K28.0 or K28.3 or K28.5	Idle in I
1	07	K28.5	Idle in T
1	9C	K28.4	Sequence
1	FB	K27.7	Start
1	FD	K29.7	Terminate
1	FE	K30.7	Error
1	Other value in Table 36-2	See Table 36-2	Reserved XGMII character
1	Any other value	K30.7	Invalid XGMII character

NOTE—Values in TXD column are in hexadecimal.

Triggers

trigger_runt - Trigger when a runt / under 64B packet is received.

trigger_over - Trigger when an oversized / greater than 9KB JUMBO frame is received. This also doubles as missing EOP/EOF trigger.

trigger_sanitiz - Trigger when the sanitizer finds some unknown condition. e.g. misaligned SOF/EOP/Control bits.

trigger_frame - Trigger when a frame is unable to be detected. missing SOP or EOP.

trigger_pcserr - Trigger when PCS Control Word 0xFE is seen anywhere in the layer 1 stream.

trigger_pcsot - Trigger when a PCS Control Word other than 0xFE(Err), 0xFB(Start), 0xFD(Terminate) is seen.

trigger_pc - Trigger when a SOP/SOF is received.

trigger_pc - Trigger when a SOP is received in an invalid byte lane.

trigger_pc - Trigger when an EOP is received.

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More examples:

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