What a 6G-capable Serdes Adds to 3G Link Performance

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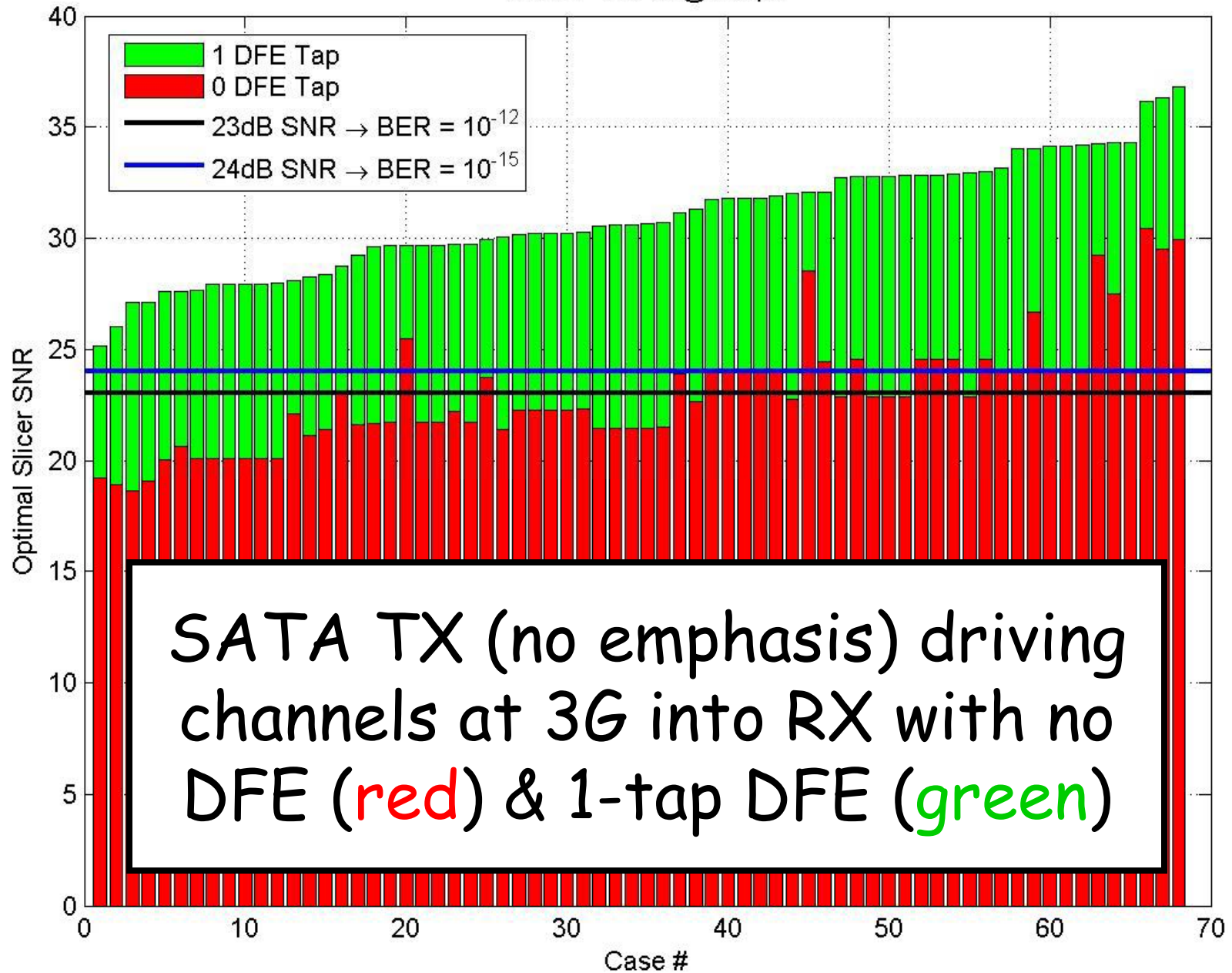
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LSI Logic

SATA Drives in SAS Systems

- SATA was never spec'd to drive long, lossy channels
  - No TX de-emphasis
  - Low TX drive level
  - No RX filtering
- Main weakness seems to be SATA->SAS
- What might the DFE capability of a 6G SAS RX do for this situation ?? ....

SATA → SAS @3Gbps

SATA TX (no emphasis) driving channels at 3G into RX with no DFE (red) & 1-tap DFE (green)

CASE	VICTIM	AGGRESSOR	CASE	VICTIM	AGGRESSOR
1	TCTF SAS CT	No Xtalk	35	HP01	HP18
2	HP26	No Xtalk	36	HP01	No Xtalk
3	HP24	No Xtalk	37	HP05	HP19
4	HP25	No Xtalk	38	HP12	HP22
5	HP06	HP19	39	HP05	HP17
6	HP11	No Xtalk	40	HP05	HP16
7	HP09	No Xtalk	41	HP05	HP15
8	HP06	HP17	42	HP05	HP18
9	HP06	HP16	43	HP05	No Xtalk
10	HP06	HP15	44	HP02	HP19
11	HP06	HP18	45	T8in	No Xtalk
12	HP06	No Xtalk	46	HP04	HP19
13	HP12	HP20	47	HP02	HP17
14	HP10	No Xtalk	48	HP04	HP17
15	TCTF SAS IT	No Xtalk	49	HP02	HP16
16	T19in	No Xtalk	50	HP02	HP15
17	HP08	HP19	51	HP02	HP18
18	HP08	HP17	52	HP04	HP16
19	HP08	HP16	53	HP04	HP15
20	HP13	HP21	54	HP04	HP18
21	HP08	HP15	55	HP02	No Xtalk
22	HP08	HP18	56	HP04	No Xtalk
23	HP07	HP19	57	HP03	HP19
24	HP08	No Xtalk	58	HP03	HP17
25	B19in	No Xtalk	59	HP13	HP23
26	HP01	HP19	60	HP03	HP16
27	HP07	HP17	61	HP03	HP15
28	HP07	HP16	62	HP03	HP18
29	HP07	HP15	63	B8in	No Xtalk
30	HP07	HP18	64	Molex onemete:	Molex onemete:
31	HP07	No Xtalk	65	HP03	No Xtalk
32	HP01	HP17	66	HP14	No Xtalk
33	HP01	HP16	67	TCTF SAS LowL(	No Xtalk
34	HP01	HP15	68	Molex halfmet(	Molex halfmet(

Conclusions

- 6G-capable SerDes will significantly improve SAS<->SATA link performance

- Likely that many SAS<->SATA links which performed satisfactorily only at 1.5G rate would run well at 3G rate when connected to new 6G-capable SerDes