S1600BASE-T
How, Why, and When?

S800BASE-T Study Group

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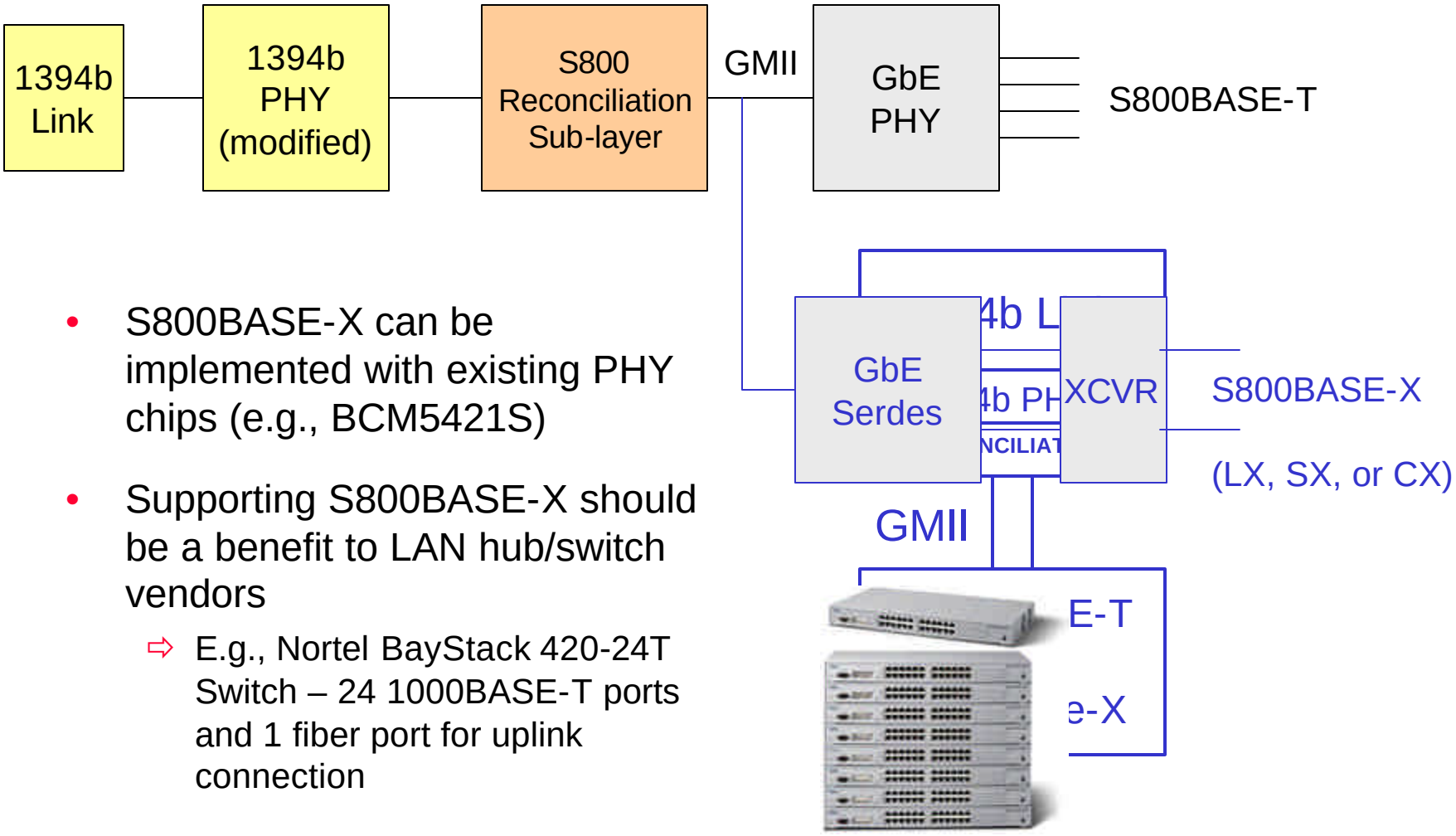
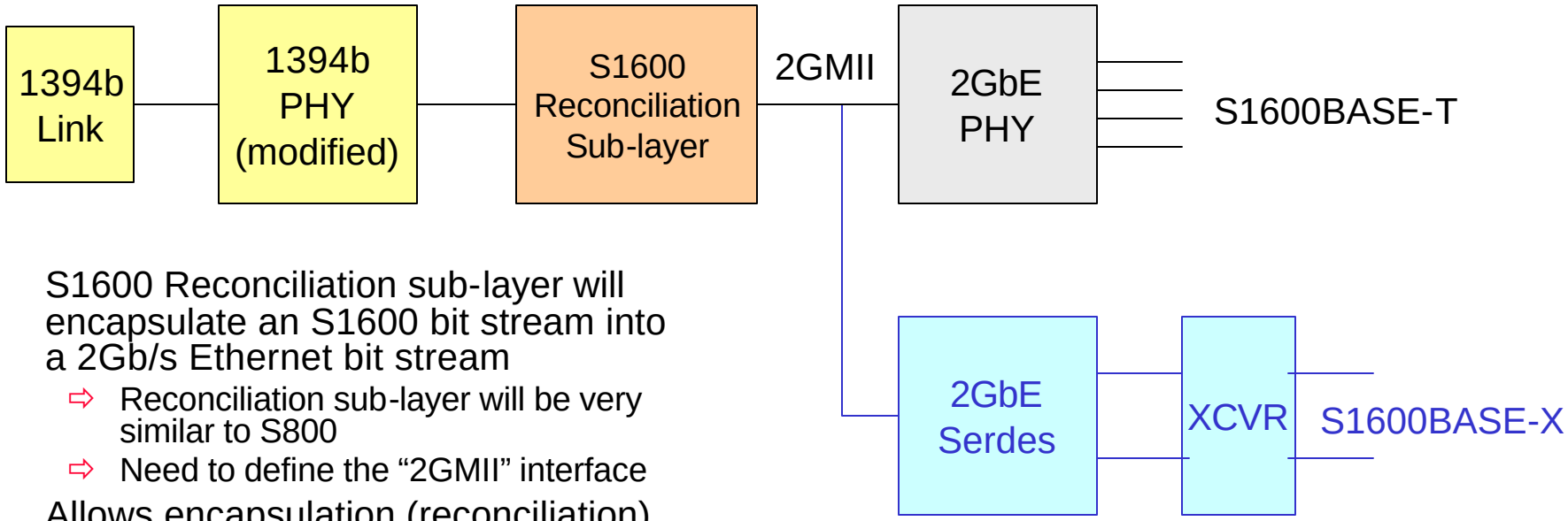
HOW ??

- Piggy-back off the S800BASE-T work.



- S800BASE-X can be implemented with existing PHY chips (e.g., BCM5421S)
- Supporting S800BASE-X should be a benefit to LAN hub/switch vendors
  - ⇨ E.g., Nortel BayStack 420-24T Switch – 24 1000BASE-T ports and 1 fiber port for uplink connection

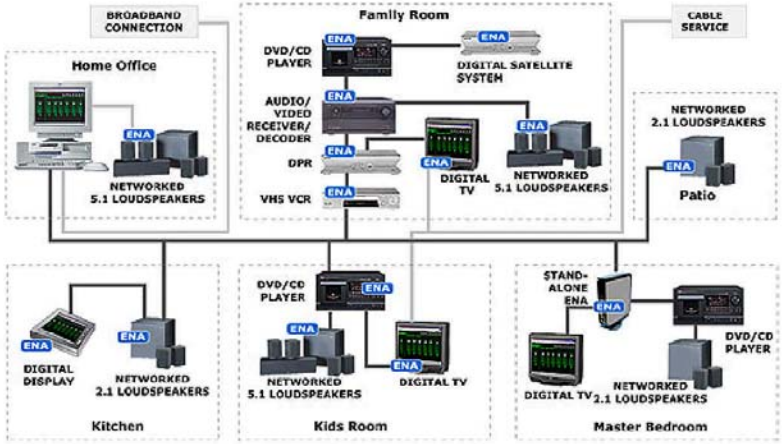
S1600BASE-T



- S1600 Reconciliation sub-layer will encapsulate an S1600 bit stream into a 2Gb/s Ethernet bit stream
  - ⇨ Reconciliation sub-layer will be very similar to S800
  - ⇨ Need to define the “2GMII” interface
- Allows encapsulation (reconciliation) and PHY to be resolved separately
- 1394b S1600 PHY chips are not yet available
  - ⇨ Modifications to the 1394b S1600 PHY spec are needed (timing issues, etc.)
  - ⇨ We can include the reconciliation sublayer modifications so that all S1600 PHYs are compatible with Ethernet operation.

WHY S1600BASE-T ?

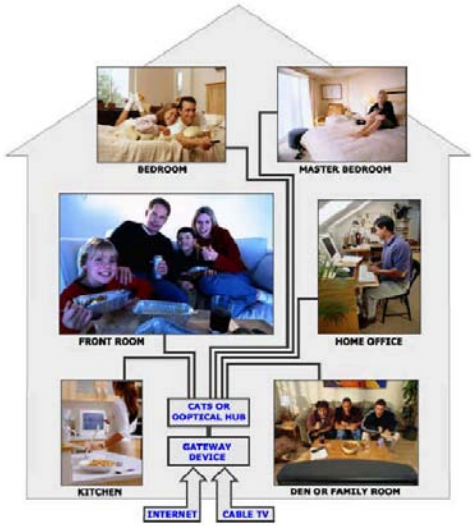
- Larger networks
  - ⇨ Shared vs. switched bandwidth
- Disk applications (RAID)
  - ⇨ Disk access speeds > 500 Mb/s
- Video and home networking applications
- Show evolutionary path
  - ⇨ For consumers and equipment manufacturers



(BridgeCo)

Video/Home Networking

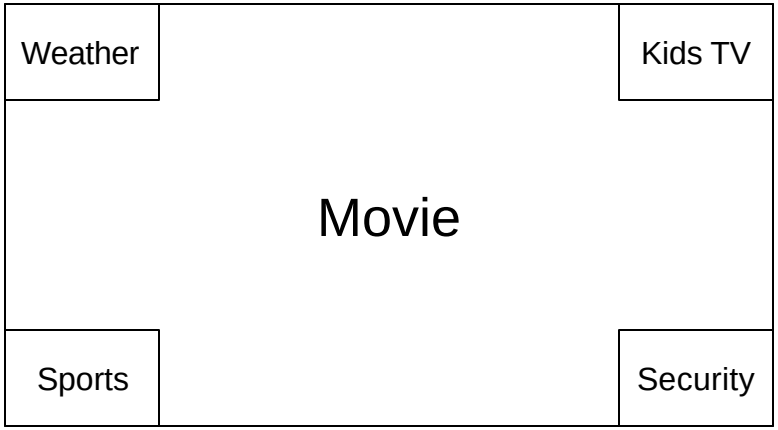
- Price of wide-screen TV's is dropping rapidly.
- Home entertainment network equipment, such as ENA from BridgeCo
- HD equipment is becoming more available and affordable.
  - ⇨ IEEE Spectrum, June 2003, "HDTV – Broadcasters and distributors are finally getting – and giving – the picture."
  - ⇨ CNET review of JVC HD Camcorder (5/23/2003): "This camcorder is a harbinger of things to come, proving that HD image-acquisition technology has already trickled down to a price competitive with that of standard-definition gear."



(BridgeCo)

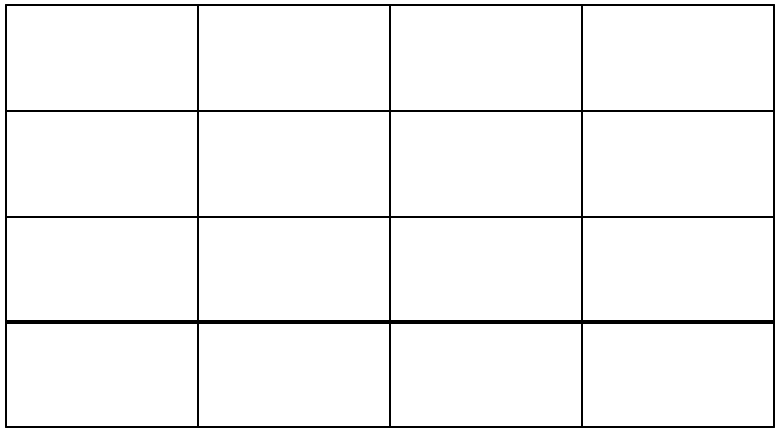
Home Networking Features

- ***Quad picture-in-picture*** -- Allows viewing a program while monitoring several other channels.

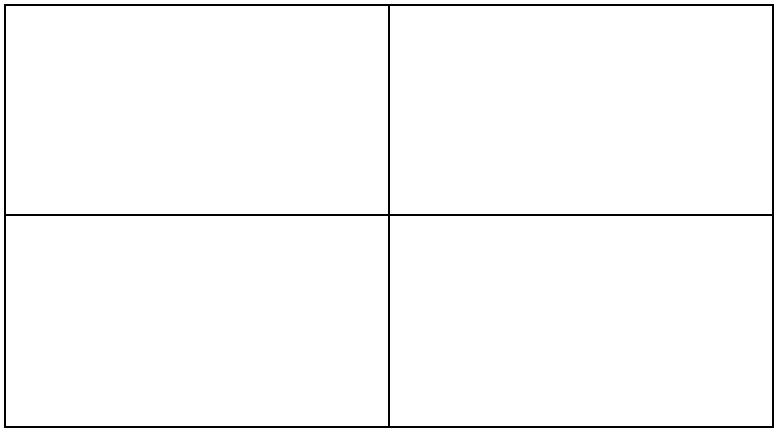


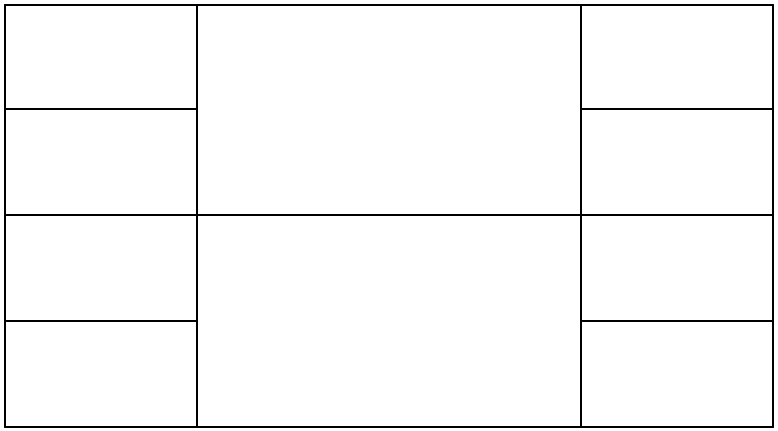
Other possible features …

- ***Channel Surfing*** -- preprogrammed with your favorite 16 channels.



- ***Hybrid modes*** -- User-defined, any combination of ¼ and $^1/_{16}$ sized windows





Video capacity of 1394 bus

Speed	Isochronous (Mb/s)		Capacity	
	Max. single channel	Max total isoch BW	SDTV MPEG-2	HDTV MPEG-2
			61883-2	61883-3
S100	64	80	2	1
S200	128	160	5	2
S400	256	320	10	5
S800	512	640	20	10
S1600	1024	1280	41	20
S3200	2048	2560	83	41
			30.72	61.44
			Data Rate (Mb/s)	

Conclusion – In a home with several TV's it is not hard to exhaust the capacity of an S800 network.

WHEN ??

There are several advantages to defining the S1600 Reconciliation Sub-layer sooner rather than later:

- Only need to submit one autonegotiation proposal to the IEEE 802.3 committee
- Get the reconciliation circuitry built into the first generation of S1600 chips
- Encourage innovative designs of 2 Gb/s PHYs
- Have plenty of bandwidth ready for innovative applications (residential and commercial)
  - ⇨ Ken Wacks (Chair of ISO/IEC SC25/WG1) – “If you give us the bandwidth, we’ll find the applications.” (3/7/2003)

Recommendation

- Develop the S1600 Reconciliation Sub-Layer spec as soon as possible
  - ⇨ Build on the S800 work
  - ⇨ DO NOT delay the S800 spec.
- This allows chip vendors to incorporate the S1600 Reconciliation Sub-layer into new PHY chips
- The S1600 spec will encourage the development of standard (and/or proprietary) 2Gb/s PHYs.