10GBase-SX

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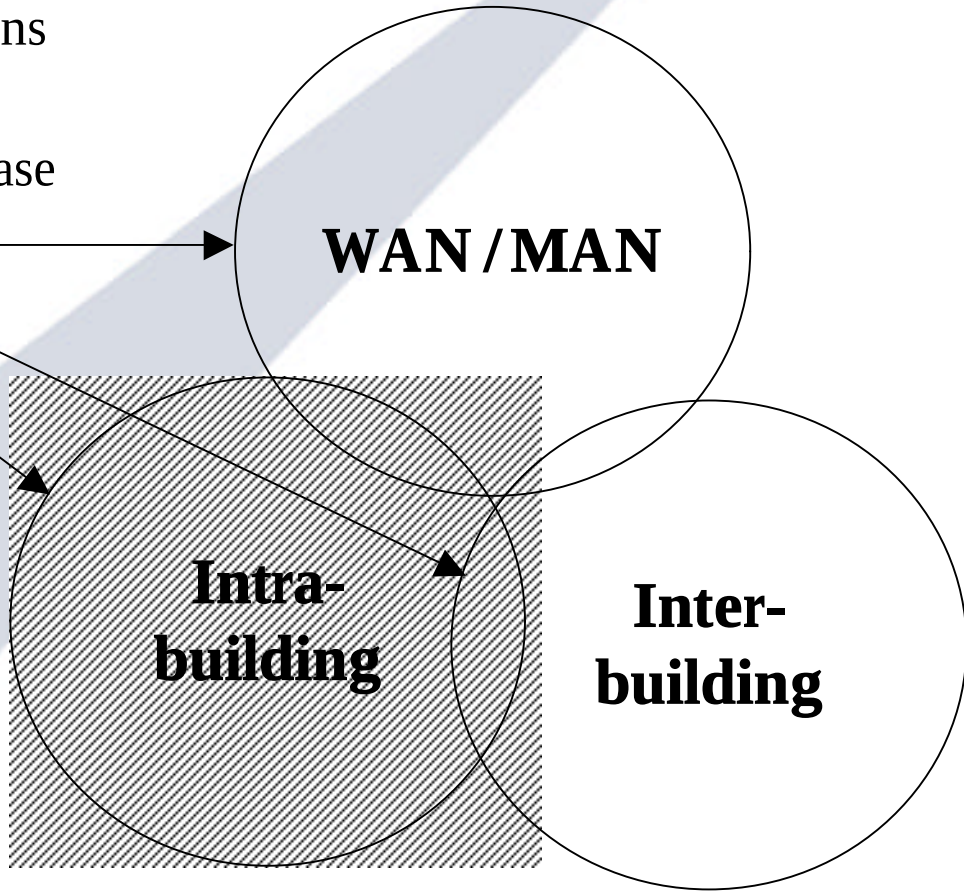
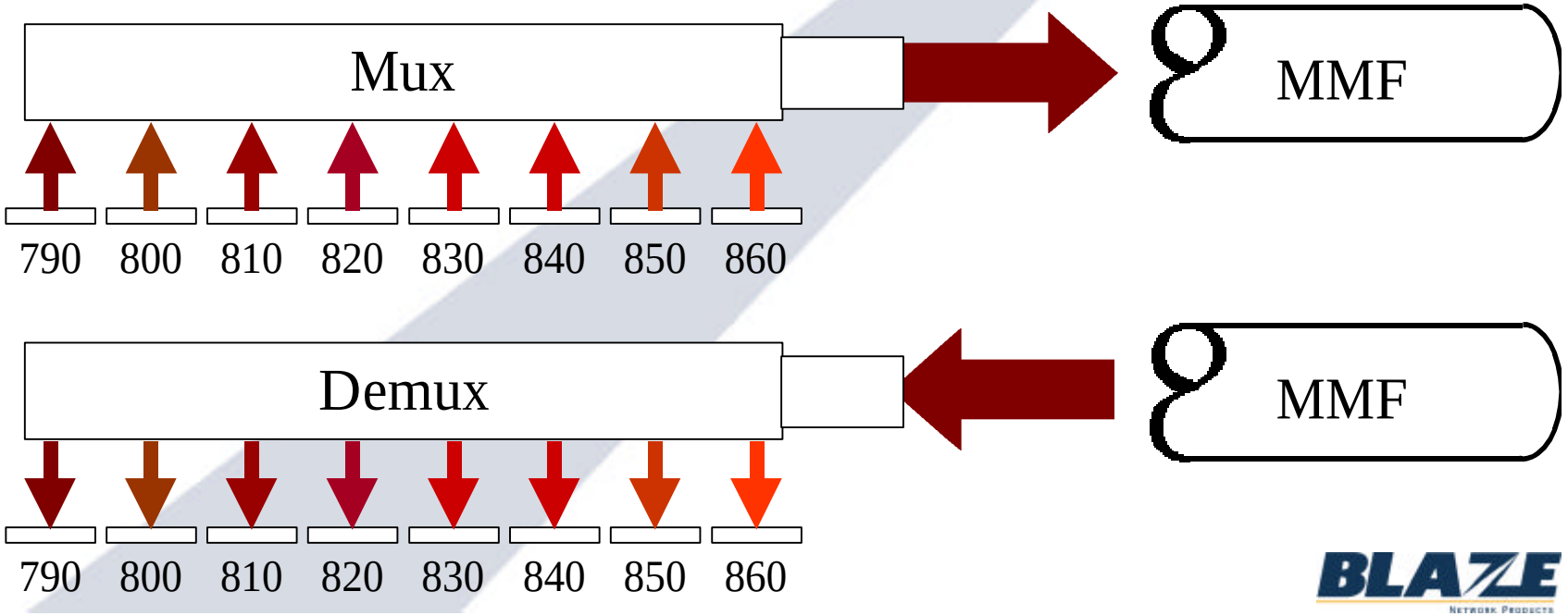
Proposal

- Include a 10GBase-SX definition
  - Very low cost solution for install base
  - Suited for intra-building applications like enterprise and ISP backbones
  - Maintains consistency with 1000Base
    - 10GBase-LX (SMF)
    - 10GBase-LX (MMF)
    - 10GBase-SX



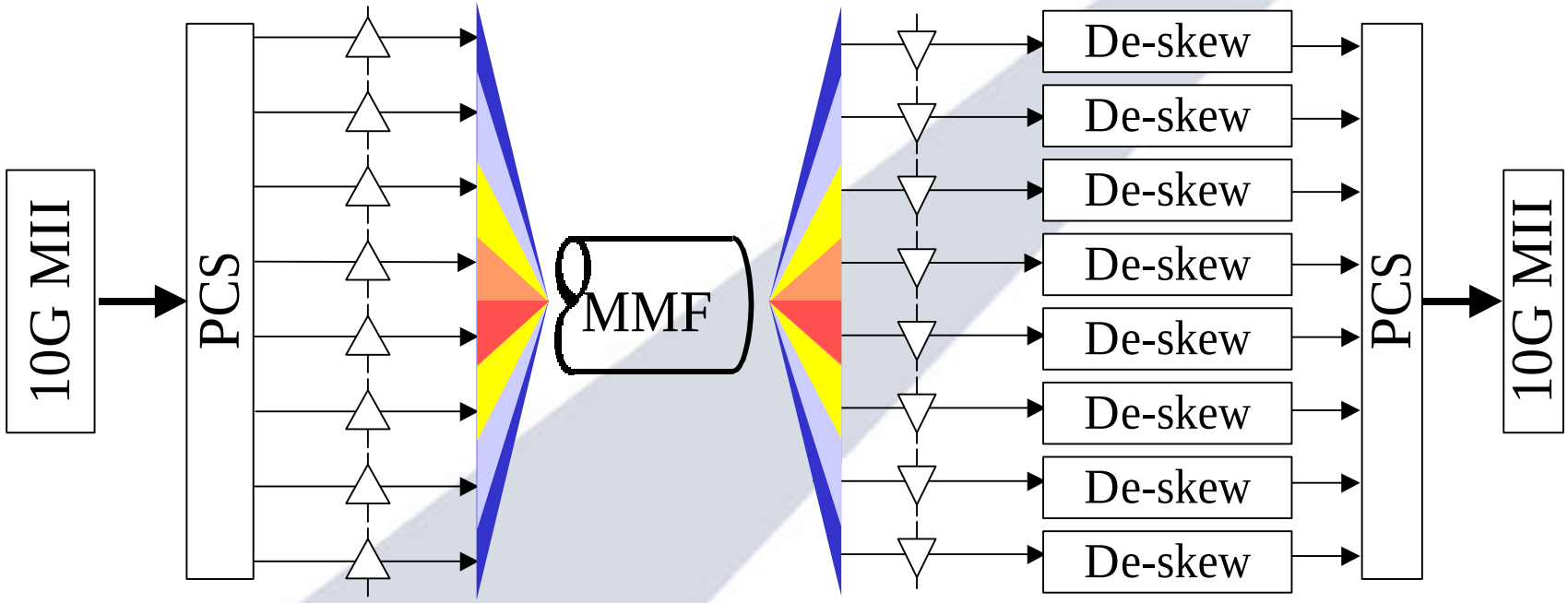
Optics

- 8-channel WWDM
  - 850nm VCSEL technology: 790nm - 860nm
  - Capable of 220m (installed MMF) to 500m (new MMF)



Electronics

- 10G MII & PCS
  - Scramble or MAS
- Skew adjustment
  - Training, bounding
- 8 x 1.25Gbps driver/receiver
  - Post-MAC striping
  - Block- or frame-bounded
  - Round-robin with arbitrary start



Benefits

- Proven technology
  - 1000Base-SX x 8
- Silicon-based
  - Implementable in .18- or .25-micron technology
- Low cost, while maintaining support for install base

Target	Low cost	Maximum distance on install base	Maximum distance
1G	1000base-SX	1000base-LX	1000base-LX
10G	10Gbase-SX	10Gbase-LX	10Gbase-LX
Max. Distance	220m (or 500m)	550m (or 1Km)	1XX Km
DCost	< 2x	< 2x	< 2x

Limitations

- Multimode only
  - Assuming current VCSEL technology doesn't change
- ~250m link length limit for installed fiber
  - Assuming no multi-level analog signaling (MAS)

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Potential Enhancements

- MAS to increase distance to 440m
- ~ 13xx nm VCSELs

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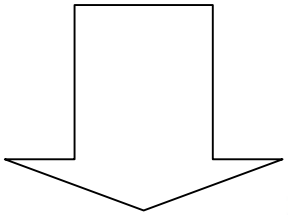
Closing

- Strong demand for low-cost 10G solution
- Users understand “-SX” and “-LX” offering
- Cheap technology exists today for an 8-channel WWDM



- Use an 8x WWDM PHY for *10GBase-SX*

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