Using G.hn in Access Networks
Topologies and Profiles
FTTDp Topology (with crosstalk)
MDU Topology (with crosstalk)

- Core Network
- Cloud-based VectorBoost (TM) Compute Engine
- PON OLT
- Optical Fiber

VectorBoost needed to handle crosstalk from neighbor lines

- Multiple twisted pairs in same bundle
- Individual microDPUs installed in central location in MDU (or Multiport DPU serving multiple customers)
- Multiple Reverse powered microDPUs

G.hn CPE/RG
G.hn CPE/RG
G.hn CPE/RG
**SFU mP2P Topology (with crosstalk)**

- **Core Network**: Cloud-based VectorBoost™ Compute Engine
- **PON OLT**: Multiple Reverse powered microDPU
- **Optical Fiber**: Crosstalk between pairs
- **Multiple twisted pairs in same bundle**: VectorBoost needed to handle crosstalk from neighbor lines
- **Multiple phone wires converge to single DP (distribution point)**: MicroDPU installation is delayed until customer signs up for service
- **Existing Phoneline**: Cloud-based VectorBoost™ Compute Engine
- **G.hn CPE/RG**: Multiple phone wires converge to single DP (distribution point)
- **G.hn CPE/RG**: MicroDPU installation is delayed until customer signs up for service
SFU P2P Topology (no crosstalk)
GiGAWire VectorBoost

DPU collects local information (traffic, noise, crosstalk estimates, etc) and sends it to VectorBoost Compute Engine in cloud. VB engine computes optimal settings (PSD, frequency, duty-cycle, etc) and sends it back to DPU, which implements it in real time.

Leveraging SDN/NFV approach:
Complexity (in HW) is removed from DP, and migrated to the cloud (in SW).
## GiGAWire Profiles

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<th>GiGAWire Standardization Profile</th>
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<td>BANDWIDTH MANAGEMENT</td>
<td>CDTA feature</td>
<td>CDTA feature</td>
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</table>
Use Case

- ITU-T G.996x standard based
- Selective up/down ratio (5:5, 3:7, 2:8)
- Dynamic spectrum management

https://www.youtube.com/watch?v=YCicl_WHFai&feature=youtu.be
Use Case

https://www.youtube.com/watch?v=nDUTTdHJ19E&feature=youtu.be
Use Case

Example G.hn SFU Wiring Model

https://www.youtube.com/watch?v=nDUTTdHJ19E&feature=youtu.be

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