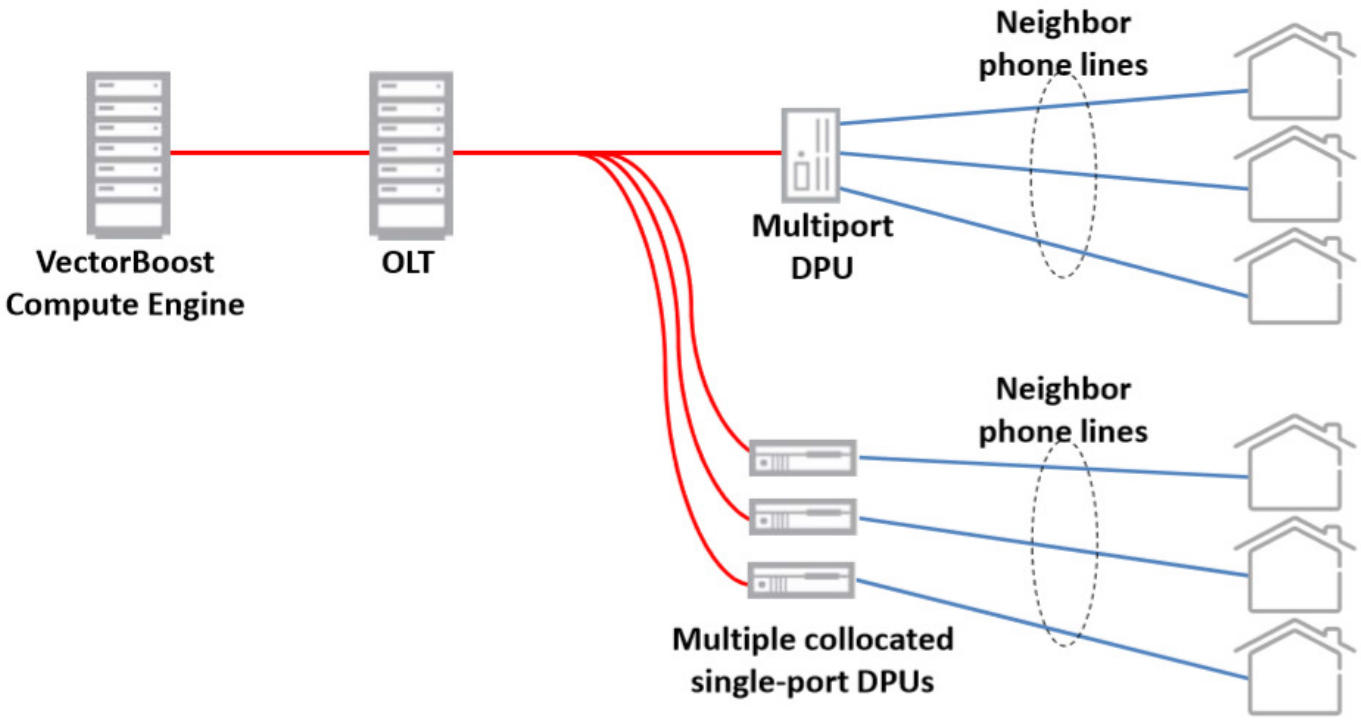
GiGAWiRE Technology

Using G.hn in Access Networks
Topologies and Profiles

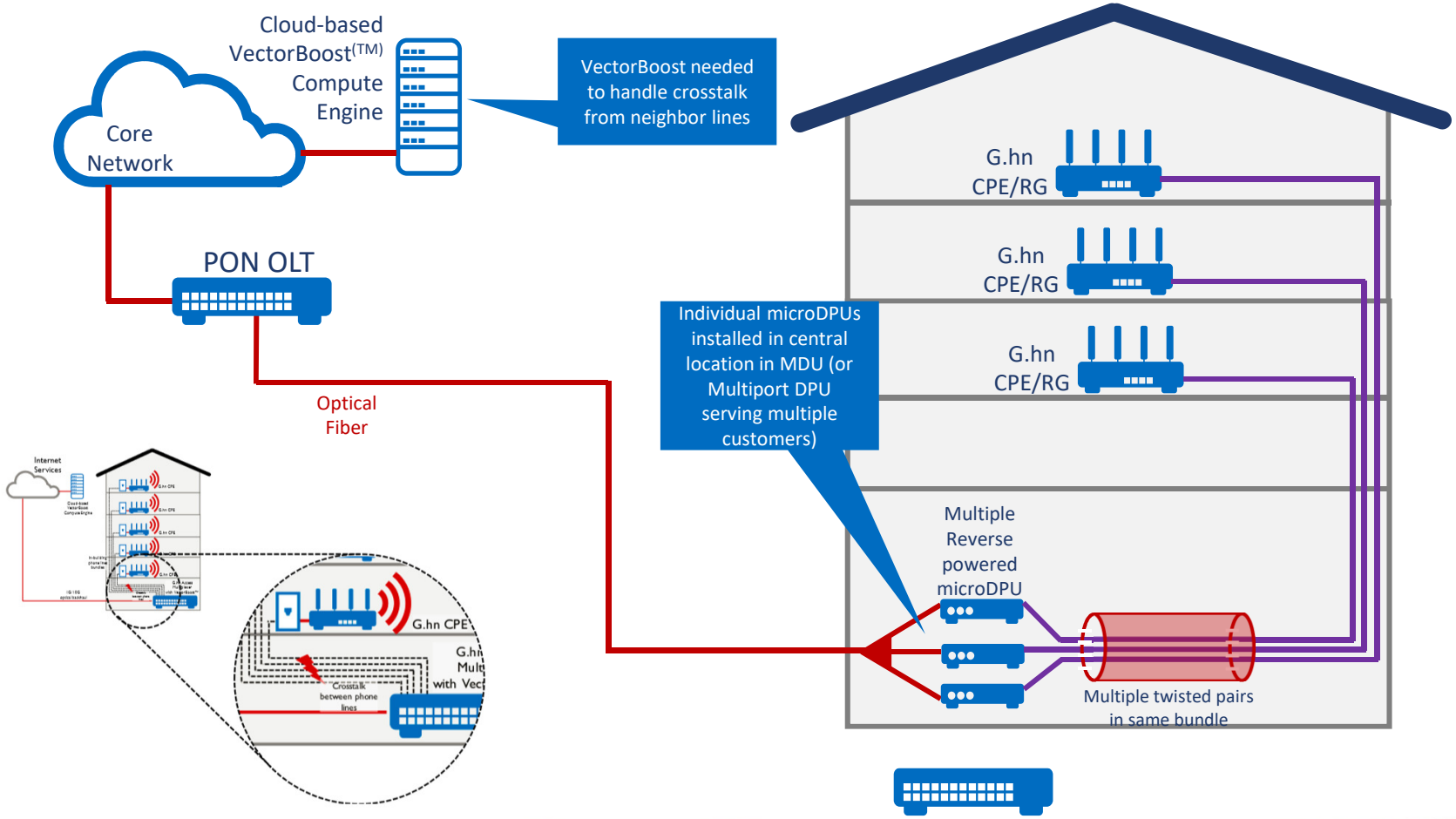
FTTDp Topology (with crosstalk)

GIGAWIRE



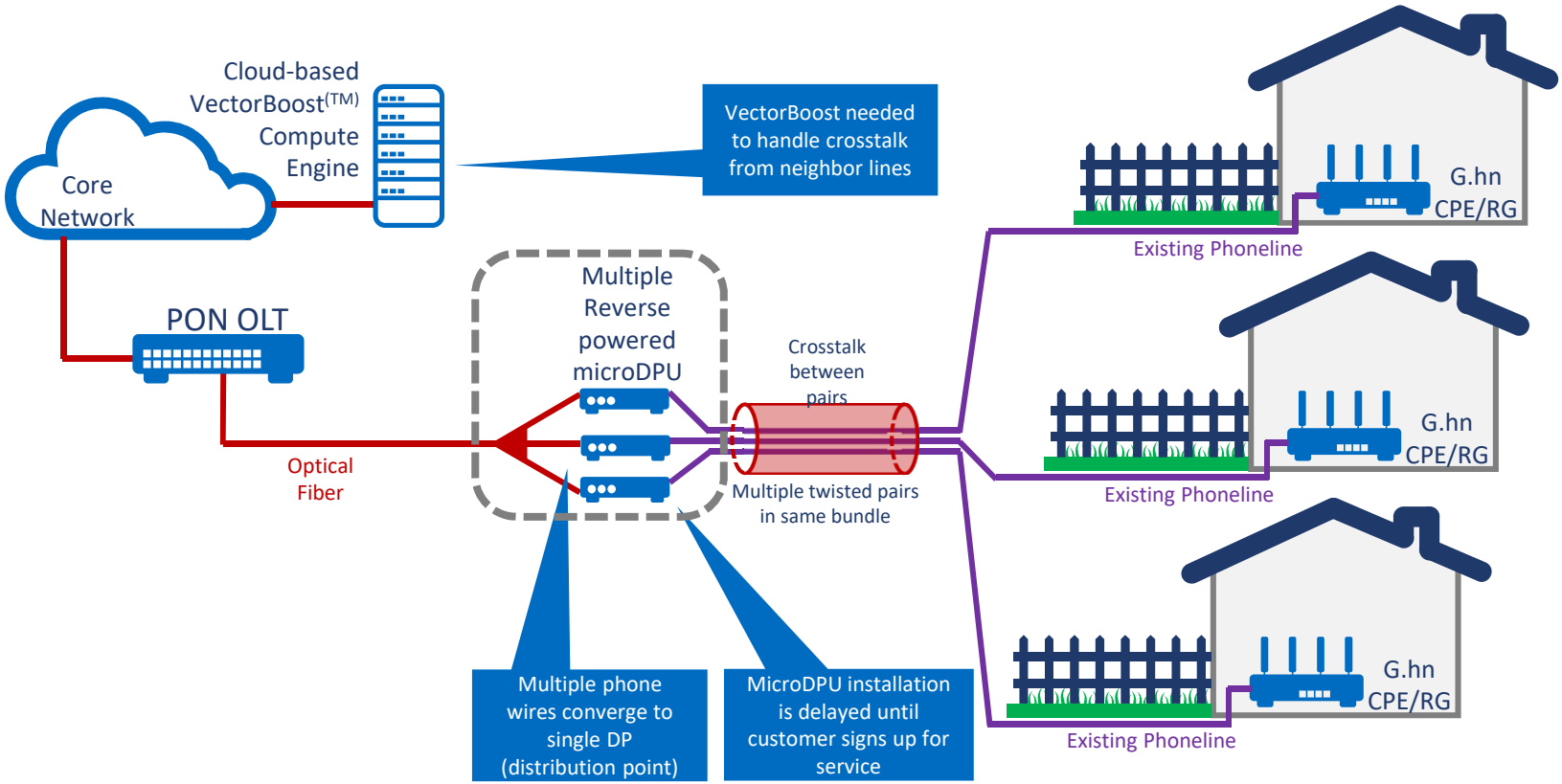
MDU Topology (with crosstalk)

GIGAWIRE



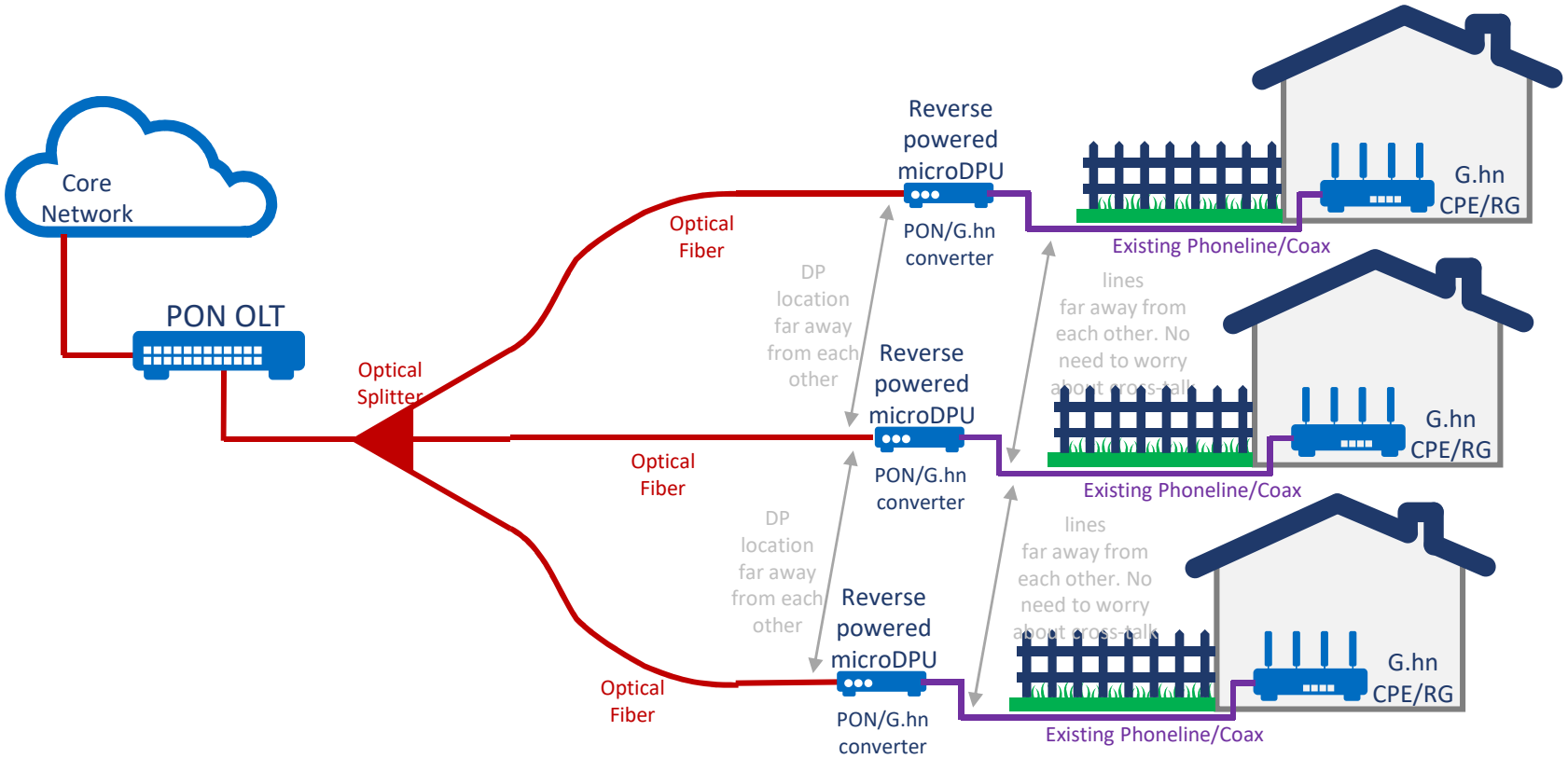
SFU mP2P Topology (with crosstalk)

GIGAWIRE



SFU P2P Topology (no crosstalk)

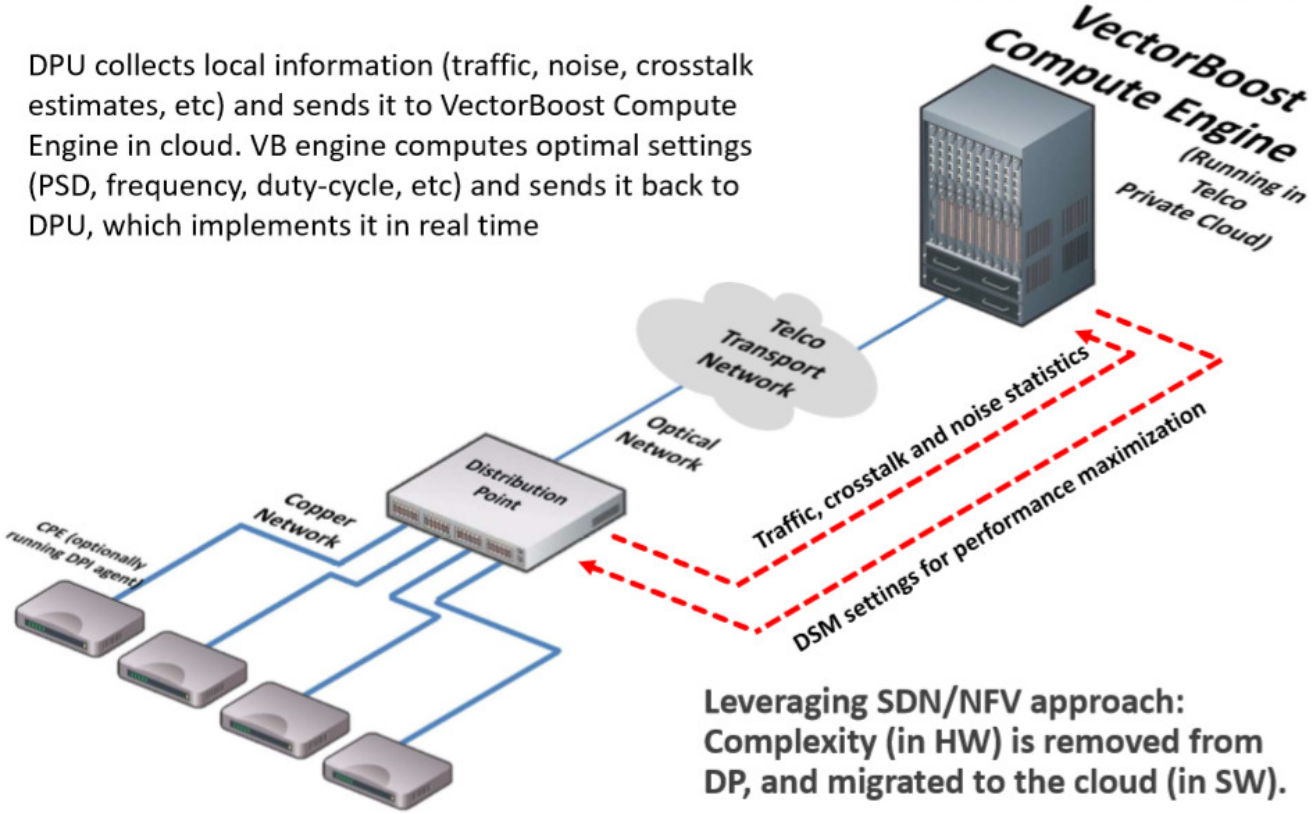
GIGAWIRE



GiGAWire VectorBoost

GiGAWiRE

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

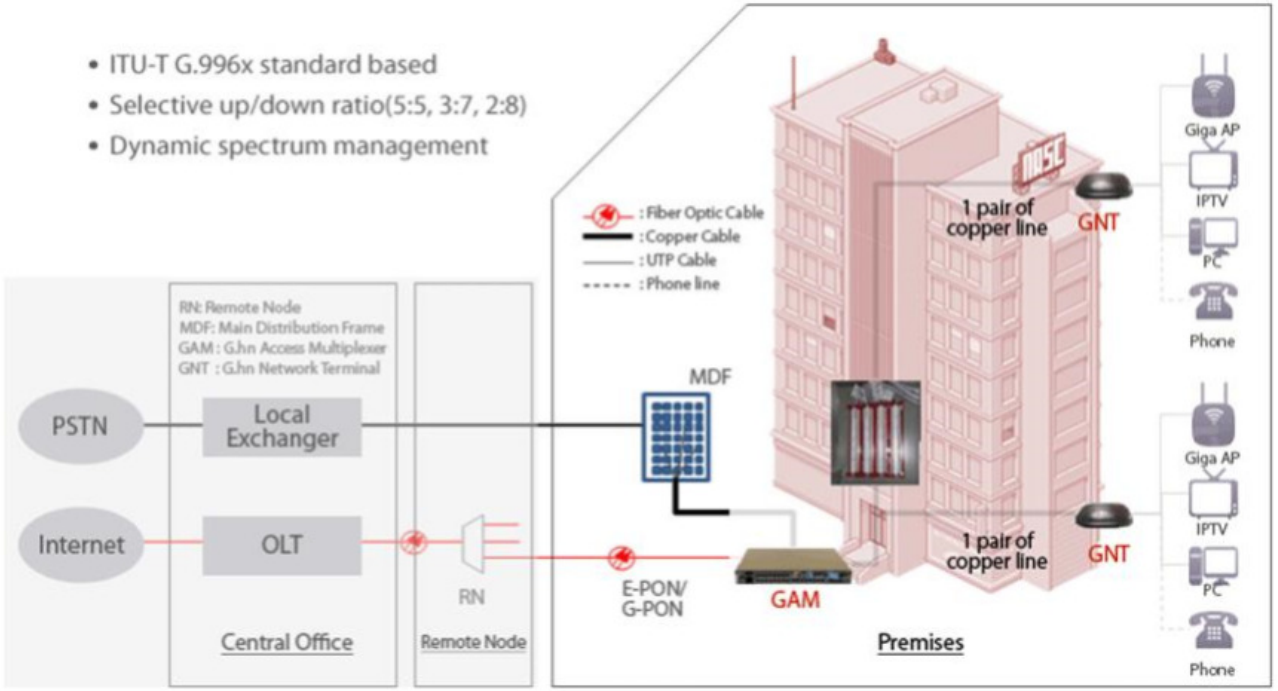
GiGAWiRE

GiGAWire Standardization Profile	GIGAWire Profile #1 GiGAWire-VB			GIGAWire Profile #2 GiGAWire-XF		
	FTTDp	MDU	SFU	MDU	SFU	FE
APPLICATION	Fiber To The Distribution point	Multi-Dwelling Units with phone lines in same building bundle	Single-Family Unit houses in same bundle	Multi-Dwelling Units	Isolated Single-Family Unit houses	Fiber extender inside the home
NETWORK CABLE	Phoneline	Phoneline	Phoneline	Coax	Phoneline or Coax	Phoneline or Coax
CONNECTIVITY	multiple Point-to-Point	multiple Point-to-Point	multiple Point-to-Point	Point-to-Point or Point-to-MultiPoint	Point-to-Point	Point-to-Point
SISO/MIMO	SISO/MIMO	SISO/MIMO	SISO/MIMO	SISO	SISO/MIMO	SISO/MIMO
CROSSTALK	Crosstalk between lines	Crosstalk between lines	Crosstalk between lines	No Crosstalk	No Crosstalk	No Crosstalk
CROSSTALK MITIGATION	VectorBoost™	VectorBoost™	VectorBoost™	Crosstalk Free (XF)	Crosstalk Free (XF)	Crosstalk Free (XF)
CROSSTALK MITIGATION ALGORITHM	Cloud based or local	Cloud based or local	Cloud based or local	N/A	N/A	N/A
BANDWITH MANAGEMENT	CDTA feature (Coordinated Dynamic Time Allocation) with adaptive DS/US split	CDTA feature (Coordinated Dynamic Time Allocation) with adaptive DS/US split	CDTA feature (Coordinated Dynamic Time Allocation) with adaptive DS/US split	DBA feature (Dynamic Bandwidth Allocation)	DS/US split Per Frame Adaption	DS/US split Per Frame Adaption

Use Case

GiGAWiRE

- 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

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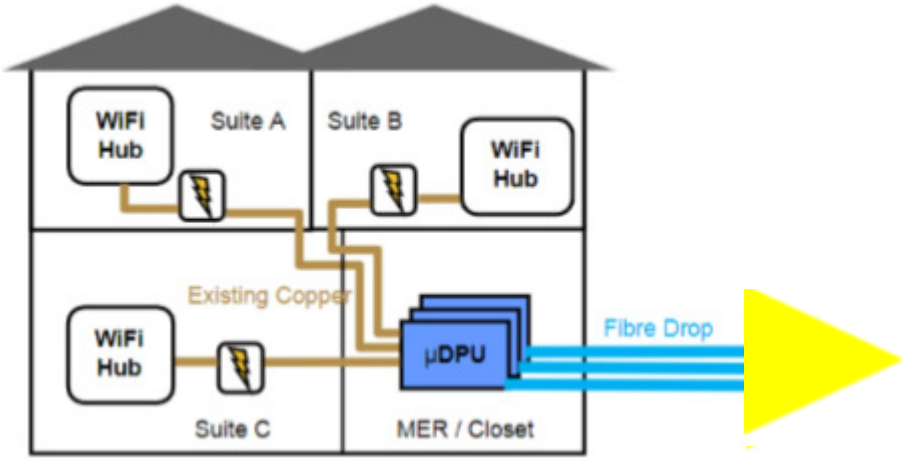
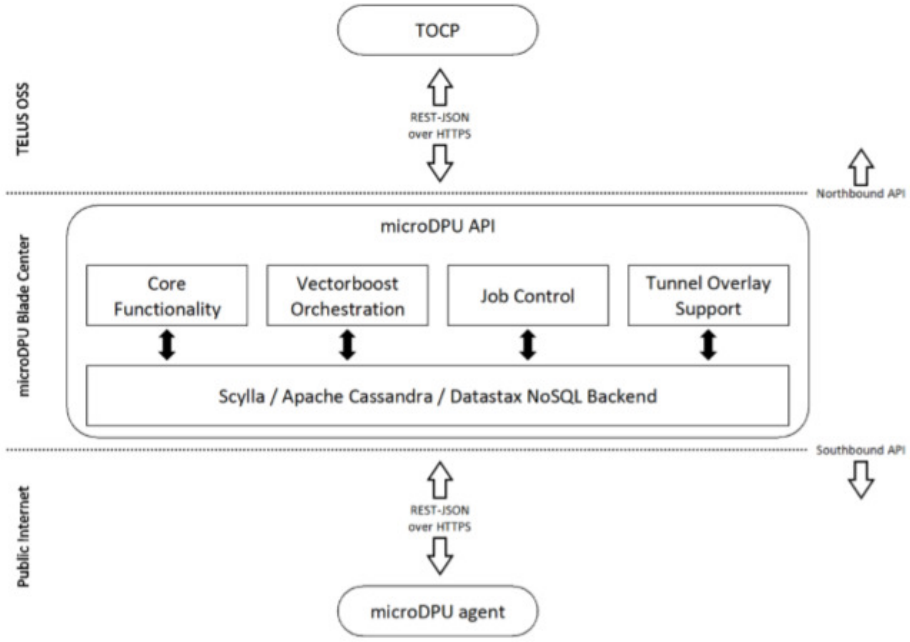
Use Case

GIGAWIRE





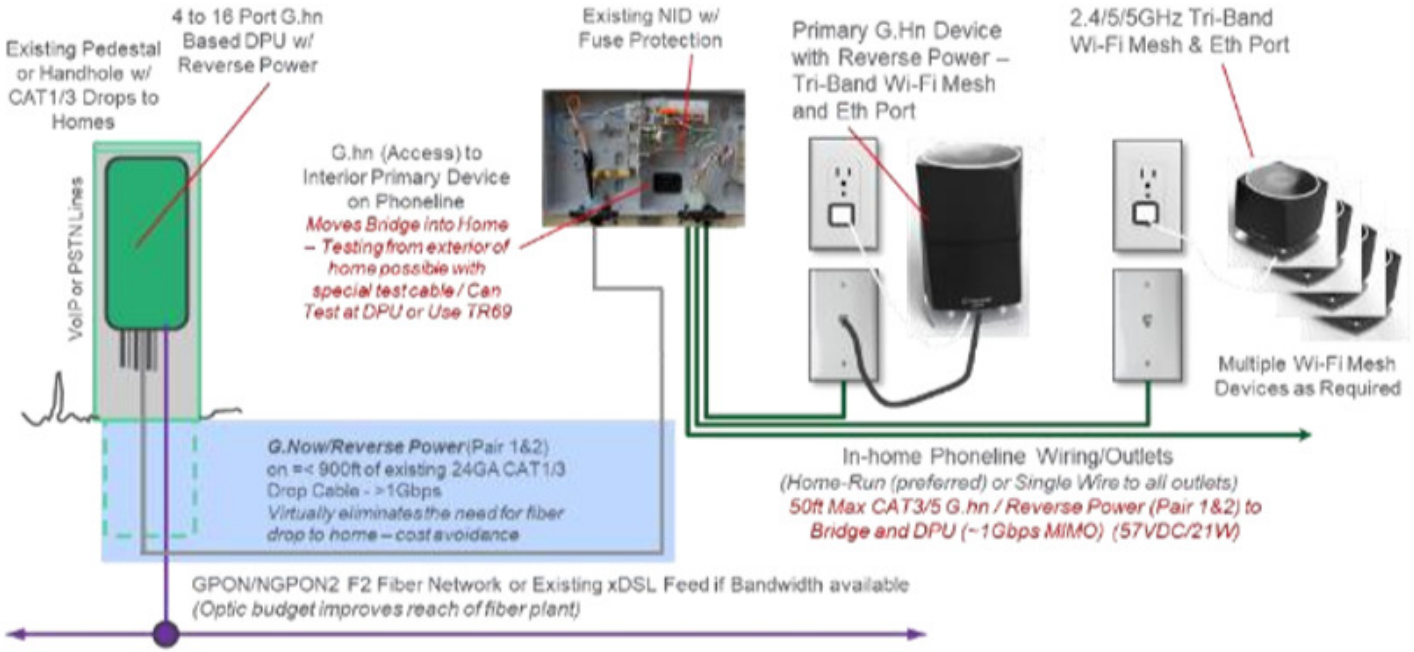
https://www.youtube.com/watch?v=nDUTTdHJ19E&feature=youtu.be

TELUS

Use Case

GIGAWIRE

Example G.hn SFU Wiring Model



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

CenturyLink

Resources

GiGAWiRE

For more information: https://homegridforum.org/giga-wire-access/

https://homegridforum.org/wp-content/uploads/2020/07/Ghn-in-access-network_v2-FINAL-June-2020.pdf