G.FAST AND SUPER-VECTORING

Delivering Tomorrow's Services Today

Rapidly deployable, programmable broadband solutions that leverage existing network infrastructure, speed time to market and reduce deployment costs.

Lowest Total Cost; Fastest Time to Market

Next-generation broadband technologies, such as Super-Vectoring, G.fast and G.hn, enable Gigabit speeds over existing infrastructure wiring drastically reducing zoning issues, build delays and tenant disruption. The higher asset utilization offered by Fiber-to-the-Cabinet/Node (FTTCab/N) can lower the subscriber connection costs by up to 70%.

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Monetizing Deep-Fiber Deployments

Vectored VDSL2 solutions with System Level Vectoring (SLV) are proven solutions available today to deliver 100+ Mbps. Emerging technologies, such as Super-Vectoring and G.fast (A1, A2 and A3) extend fiber closer to the customer, and offer higher rates (250 – 1000+ Mbps) that compete well with DOCSIS 3.1 and 5G. Extending fiber deeper into the access network shortens the copper loop lengths to support these advanced technologies. This enables up to 10 times more utilization of a networks existing multi-million dollar fiber investment.

Unprecedented Operator Interest

Since ADTRAN demonstrated the industry's first fully sealed FTTdp solution in early 2014, it has proceeded to lead the industry in G.fast trial experience. The company is fulfilling demand from more than 60 service providers across six continents who have applauded the solution's innovation and performance.

A New Deployment Model Met with Experience

FTTB/FTTdp could mean deploying Fiber-to-the-Pit, Pole, or Pedestal. This reality demands multiple input power variants including remote and reverse power techniques, as well as, weather hardened solutions.

ADTRAN is a global leader in weather-hardened, sealed broadband solutions with 100,000+ units deployed in harsh environments from Finland/Alaska to Middle East/Mexico.
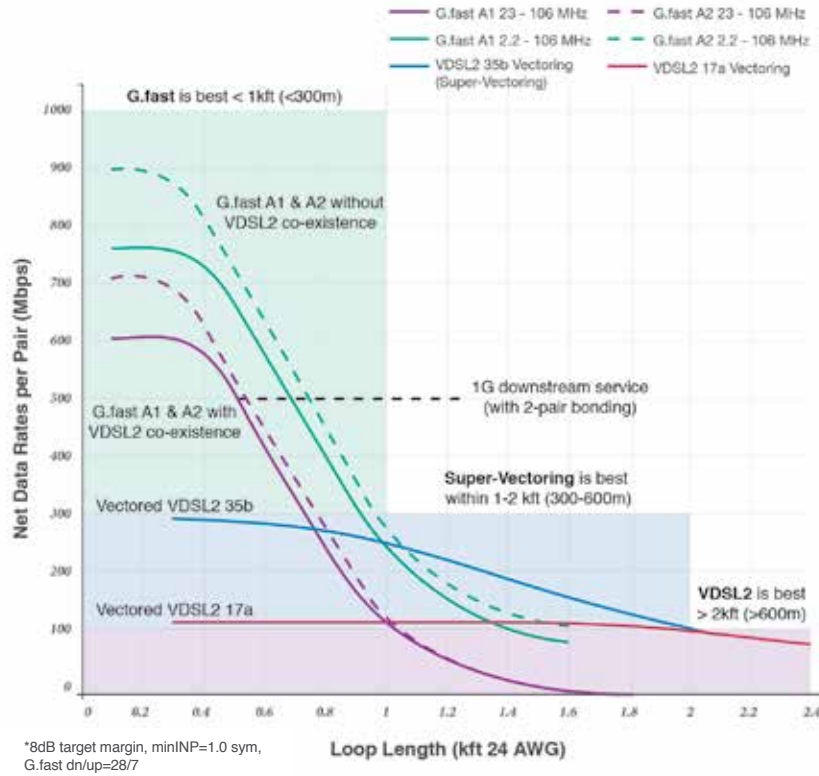
A Virtual and Versatile Access Portfolio

The FTTB/FTTdp solution is further differentiated through the use of modern SDN deployment models and a single, common OS ensuring rapid service deployment and end-user service activation. ADTRAN G.fast/G.hn solutions are managed and provisioned via open source SDN controllers as well as being both physical layer and chipset agnostic.

SDN-Programmable Networks

Successful expansion of next-generation, multi-technology access networks is predicated on the use of open and flexible systems. Operators can select best-in-class solutions from multiple vendors to accelerate the introduction of new revenue generating services across their entire network. ADTRAN is working with standards bodies like the Broadband Forum to develop open APIs and interfaces allowing simplified, rapid network integration of our virtual access solutions into any broadband network, regardless of broadband vendor or OSS incumbency.

COMPARING SUPER-VECTORING AND G.FAST TECHNOLOGIES

G.fast A1 23 - 106 MHz — — G.fast A2 23 - 106 MHz
G.fast A1 2.2 - 106 MHz — — G.fast A2 2.2 - 106 MHz
VDSL2 35b Vectoring (Super-Vectoring) — VDSL2 17a Vectoring

G.fast is best < 1kft (<300m)

G.fast A1 & A2 without VDSL2 co-existence

1G downstream service (with 2-pair bonding)

G.fast A1 & A2 with VDSL2 co-existence

Super-Vectoring is best within 1-2 kft (300-600m)

Vectored VDSL2 35b

VDSL2 is best > 2kft (>600m)

Vectored VDSL2 17a

Net Data Rates per Pair (Mbps)

1000 900 800 700 600 500 400 300 200 100 0

0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2 2.2 2.4

Loop Length (kft 24 AWG)

*8dB target margin, minINP=1.0 sym, G.fast dn/up=28/7

FTTx Access Solutions Chart

	System-Level Vectoring (17a)	G.fast A1 (106MHz)	Super-Vectoring (35b)	G.fast A2 (106 MHz)
Deployment Models *(Ideal)*	*FTTCab/FTTN* FTTdp/FTTC/FTTB	*FTTdp/FTTC/FTTB*	*FTTCab/FTTN* FTTdp/FTTC/FTTB	*FTTCab/FTTN* *FTTdp/FTTC/FTTB*
Ideal Port Count/ Effective Reach	48 – 384 Less than 3kft (900m)	1 – 16 Less than 1kft (300m)	48 – 384 Less than 2kft (600m)	1 – 96 Less than 1.5kft (450m)
Initial Market Rollout	**2014**	**2016/2017**	**2016/2017**	**2017**

Fiber-To-The-x (FTTx); x = Cabinet (Cab), Node (N), Building (B), Curb (C), Distribution Point (dp)

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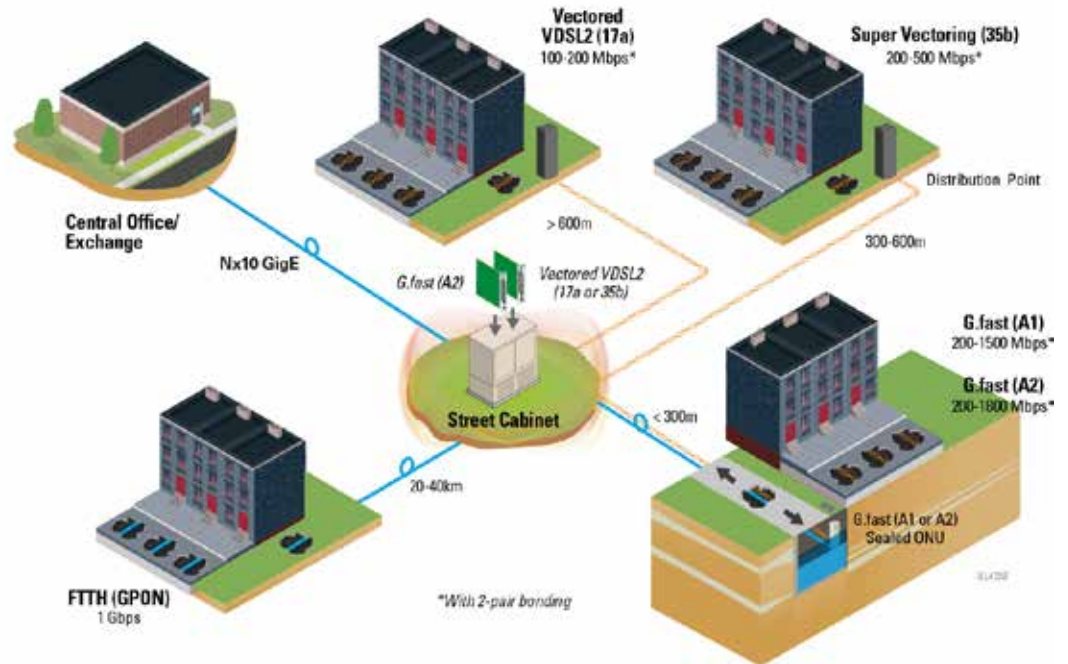
Comprehensive Broadband Toolkit

ADTRAN offers a comprehensive broadband toolkit that includes Vectored VDSL2, bonding and SLV solutions, which have been widely deployed. In addition, Super-Vectoring and G.fast technologies, and FTTH solutions (GPON, XGS-PON and NG-PON2) offer a path to even greater service rates and operational flexibility.