
APAC
20
16
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CTO
EMEA
G.fast
Further, Faster and more Flexible
ADTRAN

EU Commission VHC Proposals

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- The Gigabit Society Communication is a ‘chapeau document’ setting out the overall vision
  - A new Digital Agenda statement in effect
- It sets a new target of Gigabit connectivity for all main socio-economic drivers.
- It updates the current targets to 100Mbps universal for 2020 upgradeable to 1 Gbps by 2025.
- The document’s focus is generally on ‘very high-capacity networks’

EU Commission Implications

- The intent of the Commission is to move to FTTP/FTTB.
- CATV networks meet the performance conditions.
- G.FAST can meet the performance conditions.
- VDSL2 doesn’t meet the performance conditions.
- Regulatory response? State aid qualifications?

4K UHD

2019

25%

34%

32 Million in 2015

SOLD OUT

oculus Rift
15 Minutes

HTC Vive
15,000
10 Minutes

200 Million by 2020

$120 Billion Market

3 Billion PA

IoE Opportunity
$14.4 Trillion

$9.5
Applications
Smart Grid
Connected
Vehicles

$4.9T
Telecommuting
Travel Avoidance

NETFLIX

85 Million Subscribers
100s of Millions of
Platforms

4K
HDR

FTTH Subscriptions

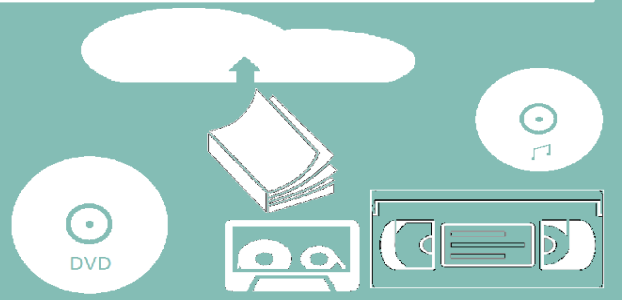
7%

15M

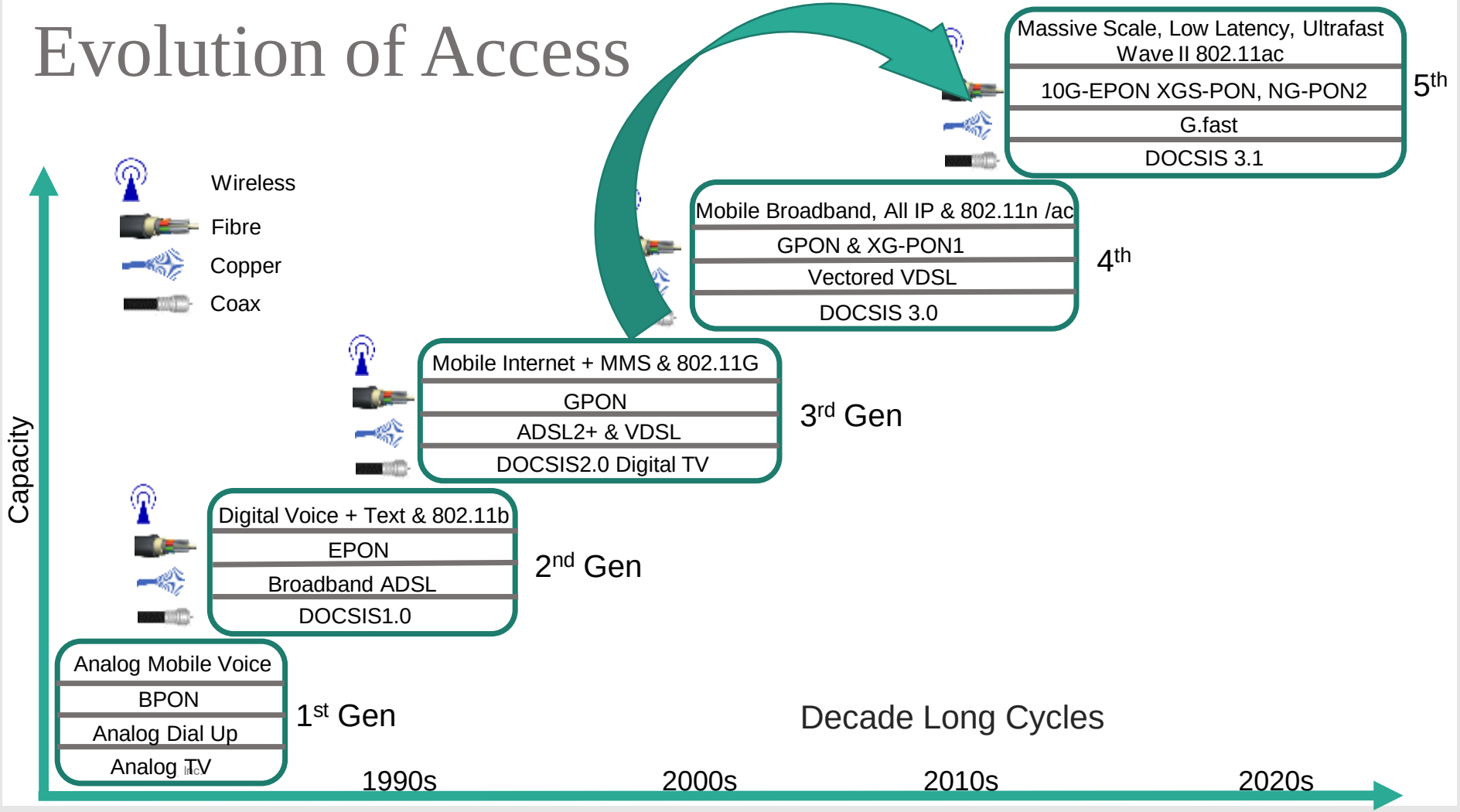
10%

12.5M

27% Take Rate 47%

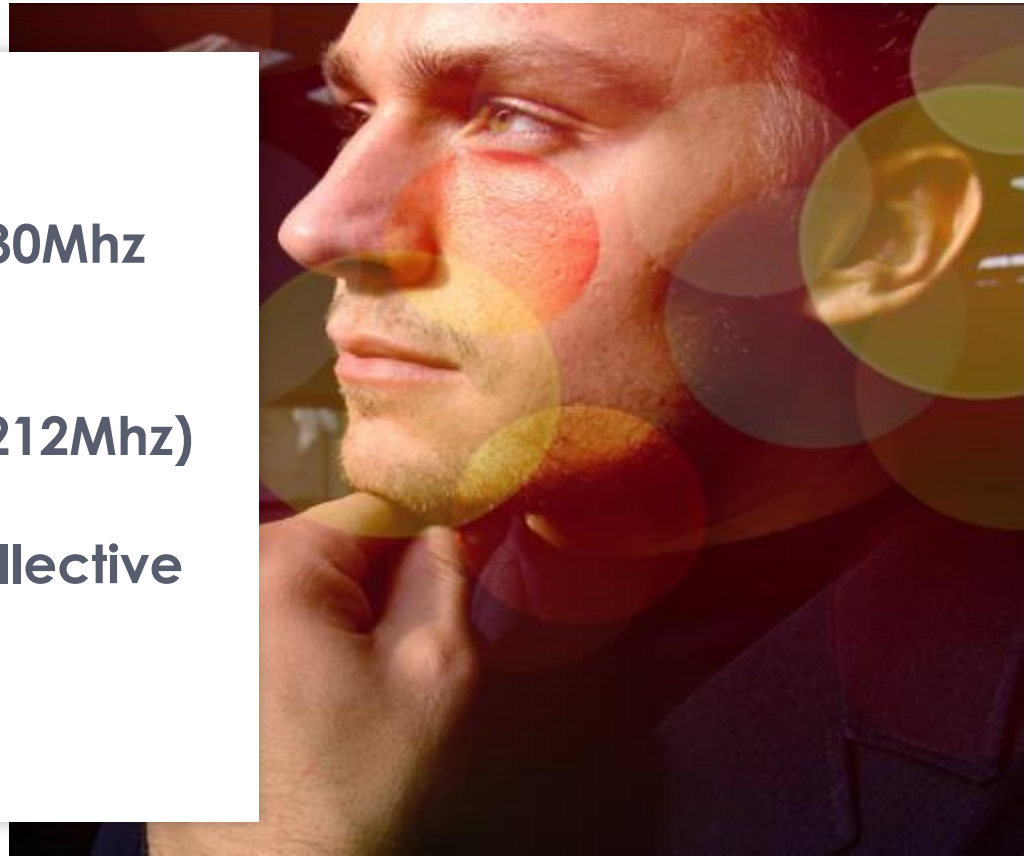


Evolution of Access



G.fast Innovations & Amendments

3dB SNR Margin
Higher Bit Loading
Increased Launch Power <30Mhz
Lower Noise Floor
Vectoring Improvements
Wider Bandwidth Support (212Mhz)
Coax Deployments
DTA – Independent and Collective Bonding
Non Linear Precoding



Moving from 6dB to 3dB SnR Margin

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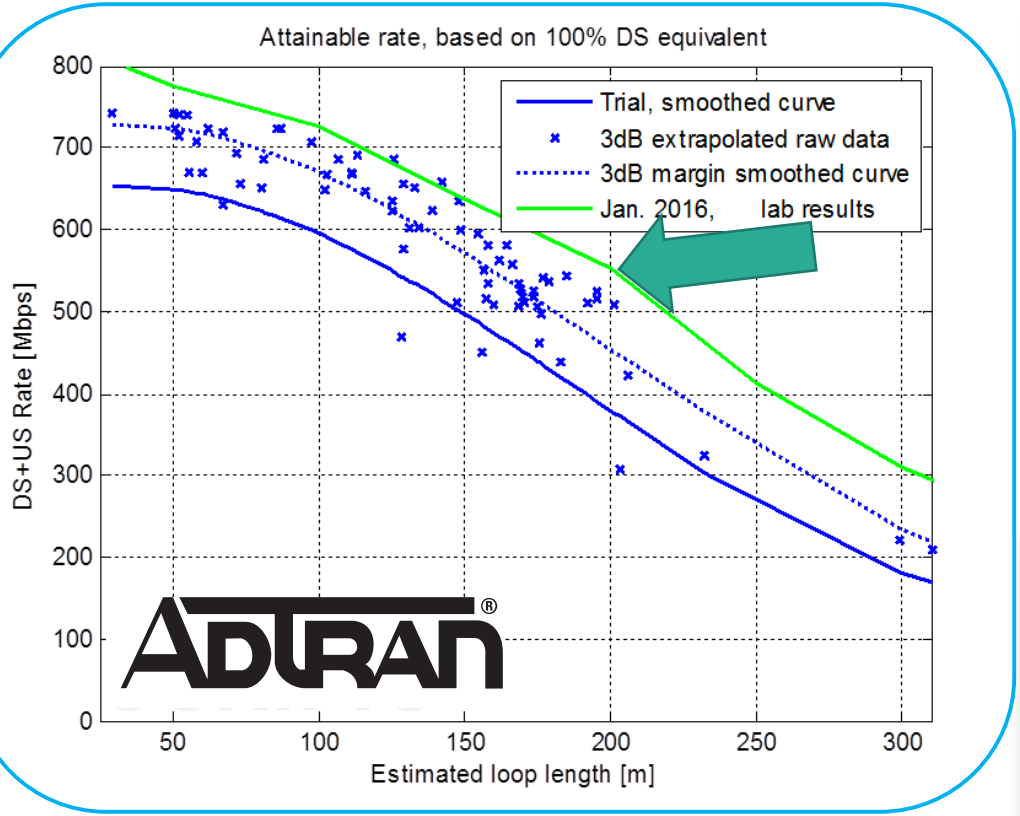

6dB Field data Smoothed Curve

Simulated 3dB Lines

New Trend line extrapolated to 3dB margin

Actual 3dB Lab Performance

Real Gains on Longer Loops

50Mbps to 100Mbps Improvements
Negligible impact on stability
SRA behaves extremely well

G.fast – Higher Bit Loading

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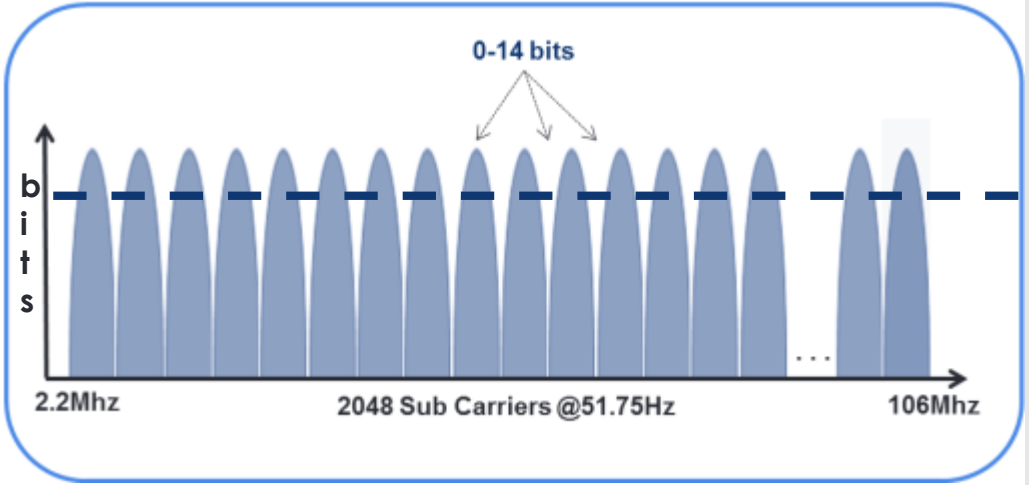
Small Improvements

Applies across entire Spectrum
12-15% Maximum improvement
Short Loops Gain most benefit



Increasing Transmit Power to 8dBm

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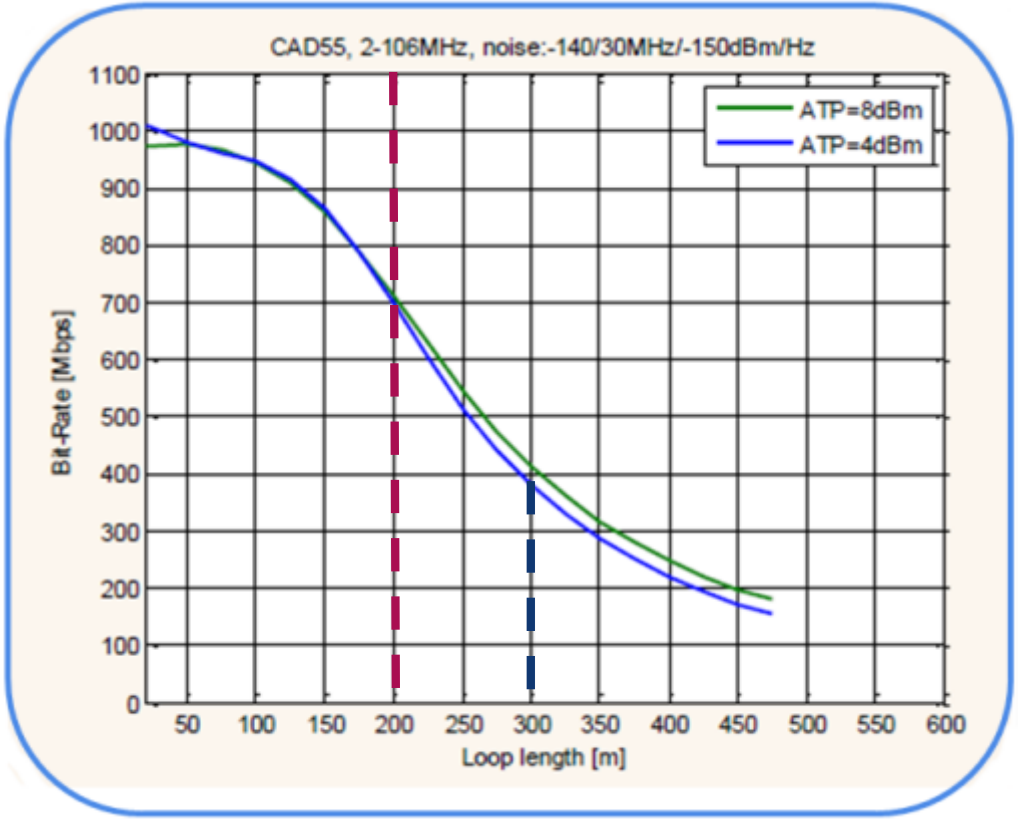

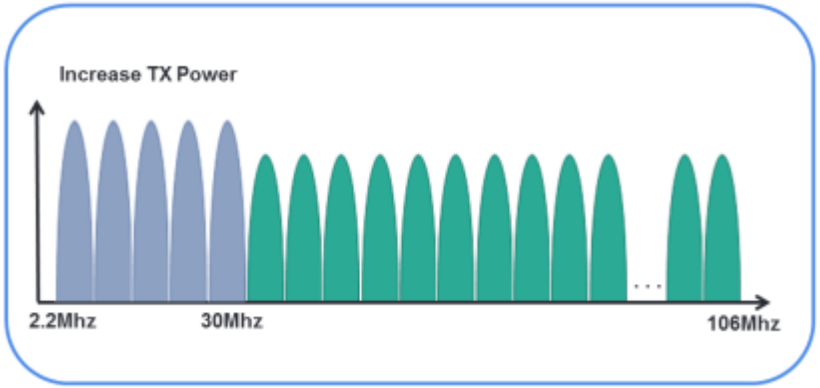

Mixed Results

Improves Performance @200m+
Lowers performance <100M

Worth Approx. 30Mbps @300m

G.fast Performance Comparison TP and Coax

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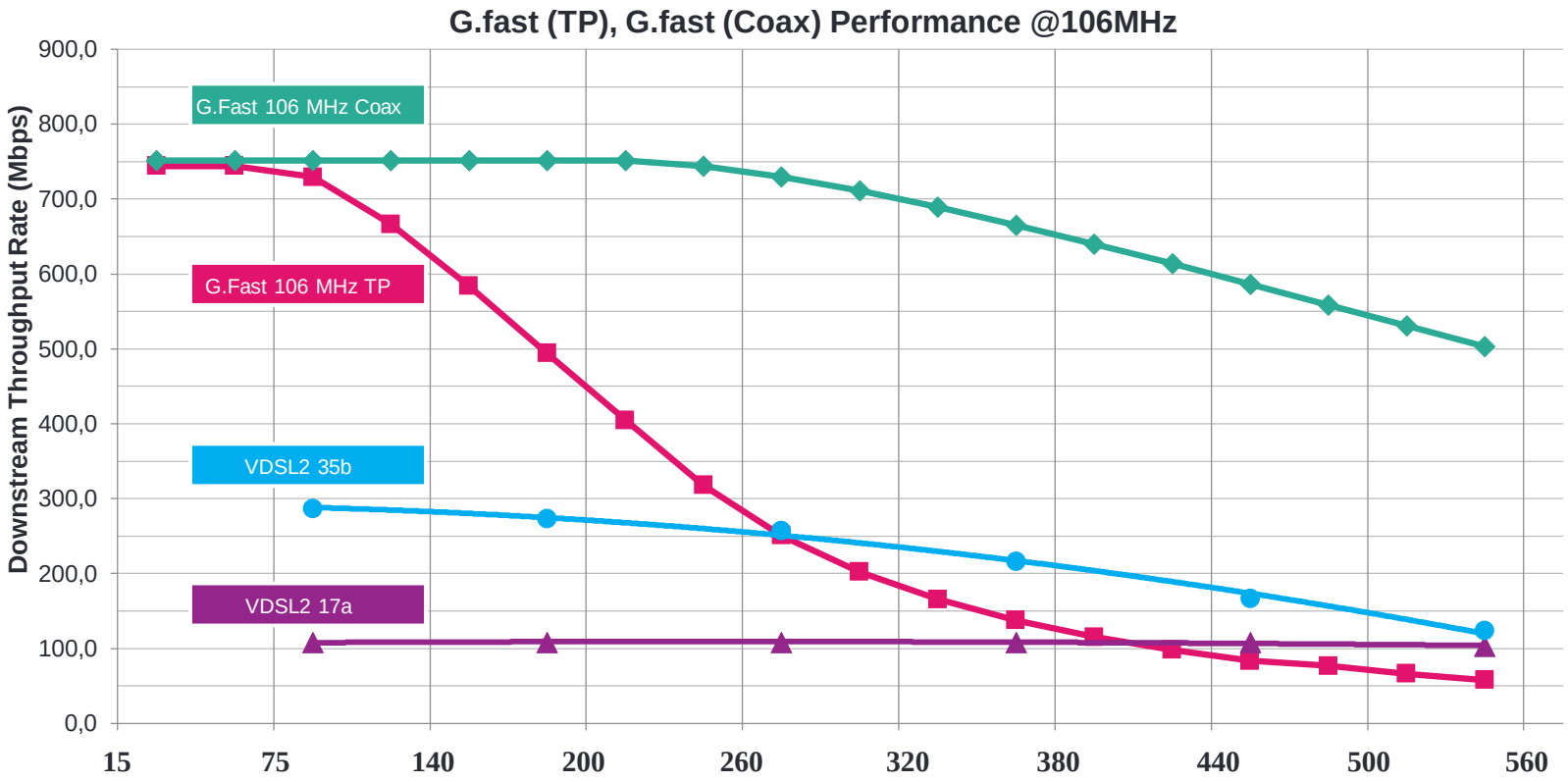

DTA – Introducing Dynamic Time Allocation

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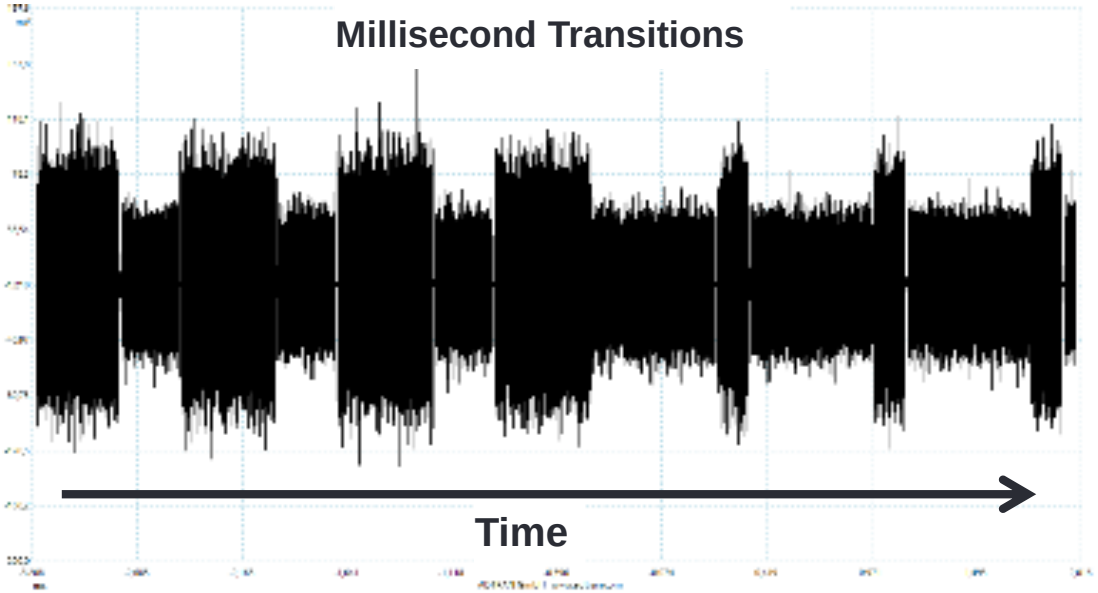
- Enable Dynamic Adjustment of the US/DS Rates
- Independent Operation for Coax or single pair TP
- Symmetric-Like Gigabit Broadband
- Coordinated DTA for Twisted pair bundles



VDSL2, Coexistance

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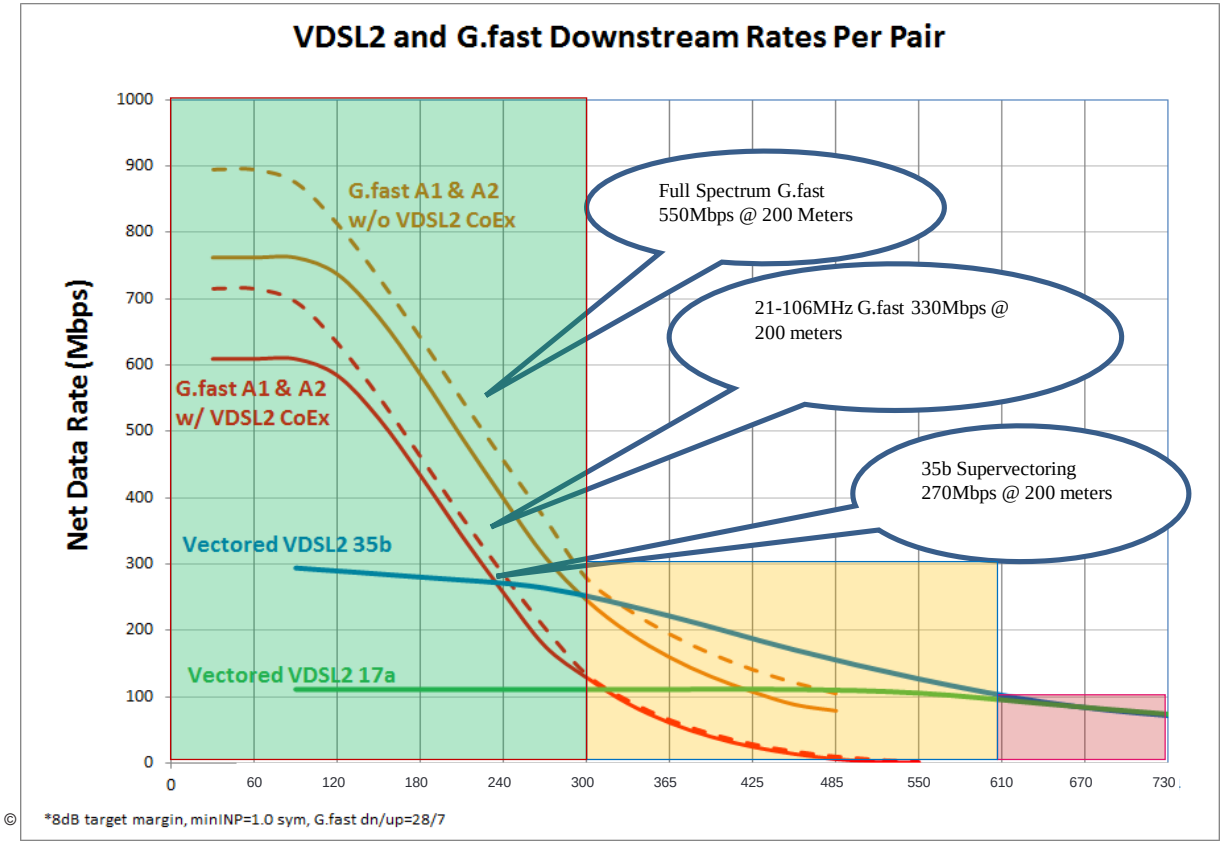

*8dB target margin, minINP=1.0 sym, G.fast dn/up=28/7

New Generation Chipsets in 2017

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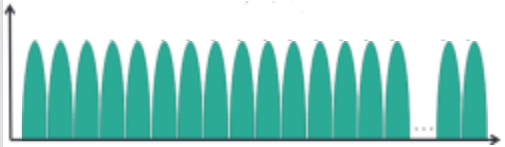
Lower Noise Floor

Vectoring Improvements

- 24, 48 and 96 Port Vectoring
- Better Performing Vectoring Engines

Double Bandwidth – 106Mhz to 212Mhz

- Big Step in performance
- Short Loops / Coax
- 212Mhz -> 424Mhz Experimentation



- 8-port DFE
- Distributed Vectoring up to 96 lines
- 212MHz support

- 8-port DFE + integrated AFE
- Distributed Vectoring up to 24 lines
- 212MHz support

- Vectoring Engine
- 48 lines per device
- Scalable to 96 lines

G.fast Performance: Adding It All Together

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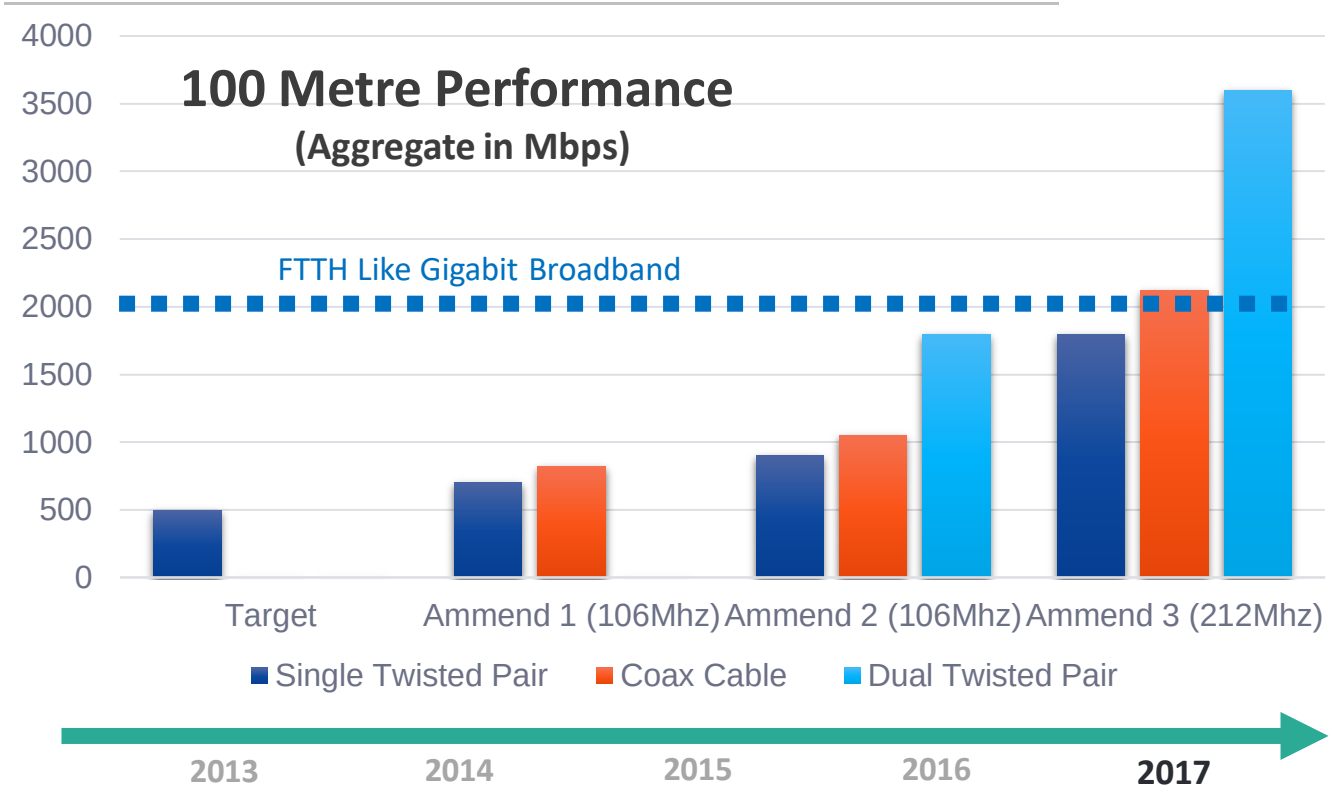

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Summary

- Consumer Appetite for More Capacity and New Service Innovation Persists
- EU Commission Gigabit Society Targets have Technology Choice Implications
- FTTH wherever Possible to Future Proof Investments
- Full Spectrum G.fast to Leapfrog EU Peers and Position Greece at the Forefront of Digital Europe

Thank You

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