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VDSL DMT is Here , Rev 1.0

Supporters



- » Ikanos Communications
- » Alcatel
- » Zarlink
- » St. Micro
- » GlobeSpanVirata
- » IBM

A history of DMT line code



- Four to Five years ago there were two camps in ADSL
 - DMT camp using FDD method
 - CAP/QAM Camp using 2 band FDD method
- About the same time there were also two camps in VDSL
 - DMT camp using TDD method
 - CAP/QAM Camp using 2 band FDD method
- *Standard bodies selected ADSL DMT*
- *VDSL was sent back for more work*
 - Standard bodies only accepted FDD VDSL
 - Five bands became the standard
 - 4 bands + Optional bands resulted from the standard bodies action

What is the status of DMT today



- » The challenges ahead were
 - DMT team had to develop an FDD system
- » QAM team had to make 4 bands FDD (5 band is difficult for QAM)
- » Initially it appeared that QAM may be able to finish this race sooner
 - DMT camp were being criticized as to whether there are any chips available soon
- » The first 4-band system that was capable of delivering 50 Mb/S downstream and 30 Mb/S upstream was demonstrated at FS-VDSL in March of 2002

And It was a DMT Chipset

Question 1: How do you make a technology cheap

- » The answer to question 1 is question 2
- » *The answer to Question 2:*
 - *How do you make a technology mass marketable*
- » The road to mass market is to find the leaders in a particular industry who have done similar work before and ask them to do it again with

Interoperable Solutions

VDSL-DMT Interoperability Initiative is now underway



Initiative Deliverables

- » Interoperability by all five vendors
- » VDSL-DMT Physical layer interoperability and verification
- » Frequency band plans 998 and 997 per ITU-T standard
- » Speeds up to 52 Mbps
- » Ethernet testing
- » Applications Verification : Video, Voice, and High Speed Data

Interoperability Benefits

- » Facilitates mass deployment
- » Enables
 - » Self-installs
 - » Off-the-shelf CPE
 - » Multi-sourced CPE
- » Drives down cost
- » Available anywhere, anytime

DMT is the Best Line Code for Copper Access



- **12M deployed ADSL-DMT lines**
 - If it works and is the best then don't change it
- **DMT offers much higher throughput than QAM on short loops for Fiber to building applications**
 - Bit-loading – DMT up to 15 bits/Hz, QAM is 8 bits/Hz
 - 7.5% overhead in DMT, 20% overhead in QAM
- **RBOCs have man-decades of operational investment in DMT**
- **DMT offers lower power and cost over the long-term**
 - Digital complexity in DMT scales easily with smaller semiconductor process geometries
 - QAM has more analog complexity due to filtering which does not scale very well