DOCSIS PRE-EQUALIZATION: VASTLY POWERFUL, OFTEN UNDERVALUED
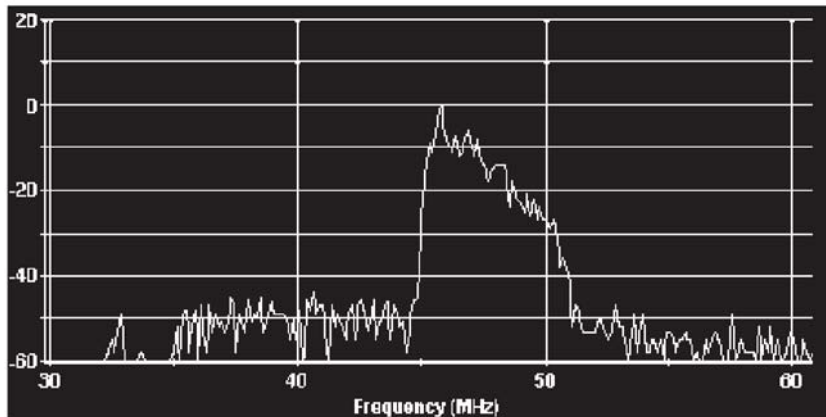
Brady Volpe

President & CTO

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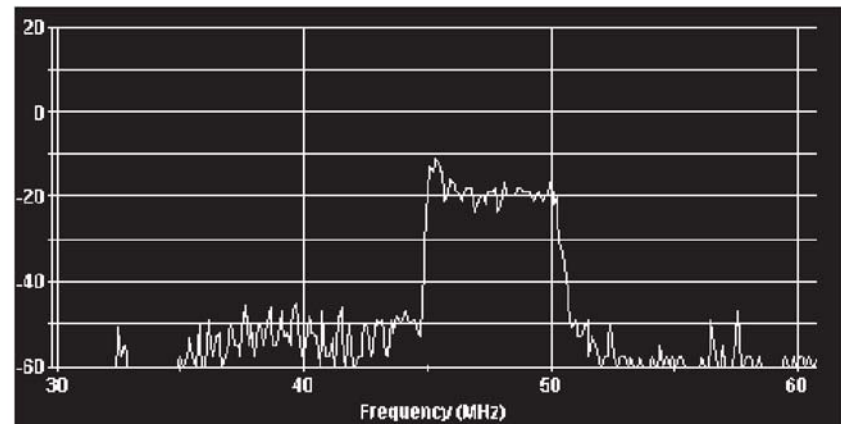Tweet about today's session on Twitter #scteExpo

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What is DOCSIS Pre-Equalization

▶ Feature in Cable Modems (CM)

– Pre-distorts upstream signal to compensate for RF impairments

– Signals arrives at CMTS nearly unimpaired

Roll-off Due to Diplex Filter (at CMTS)   Pre-EQ Adjusts CM Output (at CMTS)
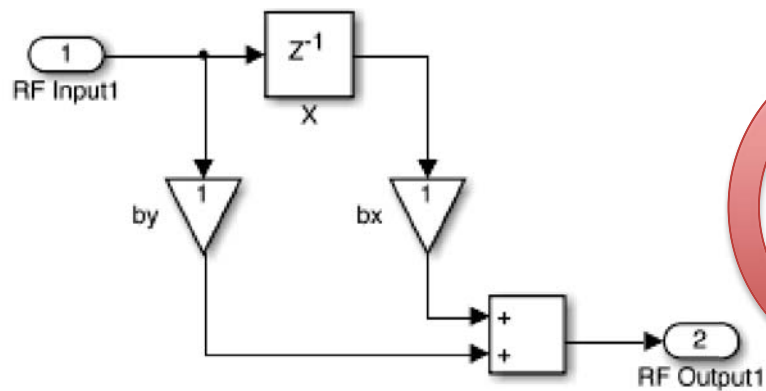
What Else Can We Do with Pre-EQ?

▶ We Can Examine the Pre-EQ Coefficients
  – We will turn these into taps

▶ Looking at These Coefficients Tells Us Many Things:
  – Frequency response of RF plant between CM & CMTS
  – Distance to impairment (in feet or meters)
  – Often type of impairment
  – Correlate many CMs to get very accurate
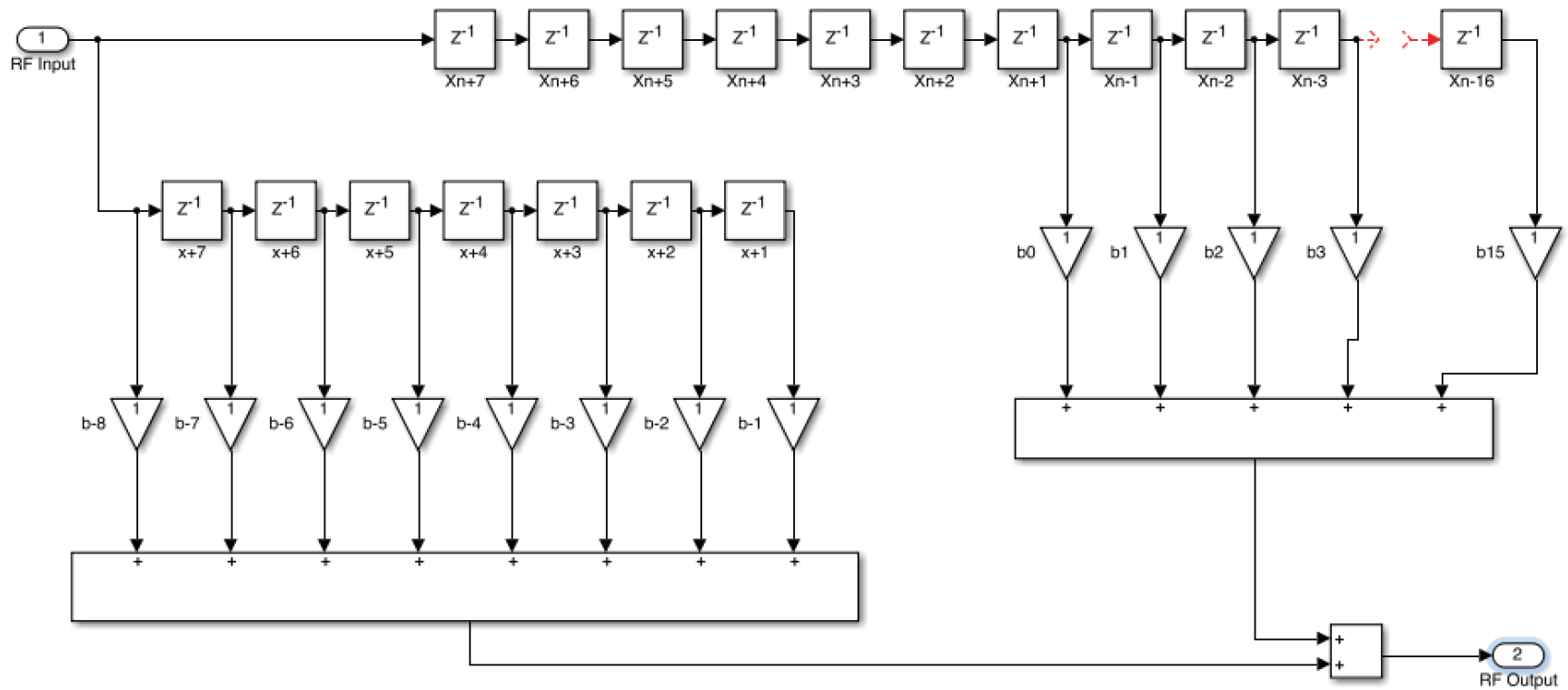 – Collect Coefficients over time

A Tap is not a Tap
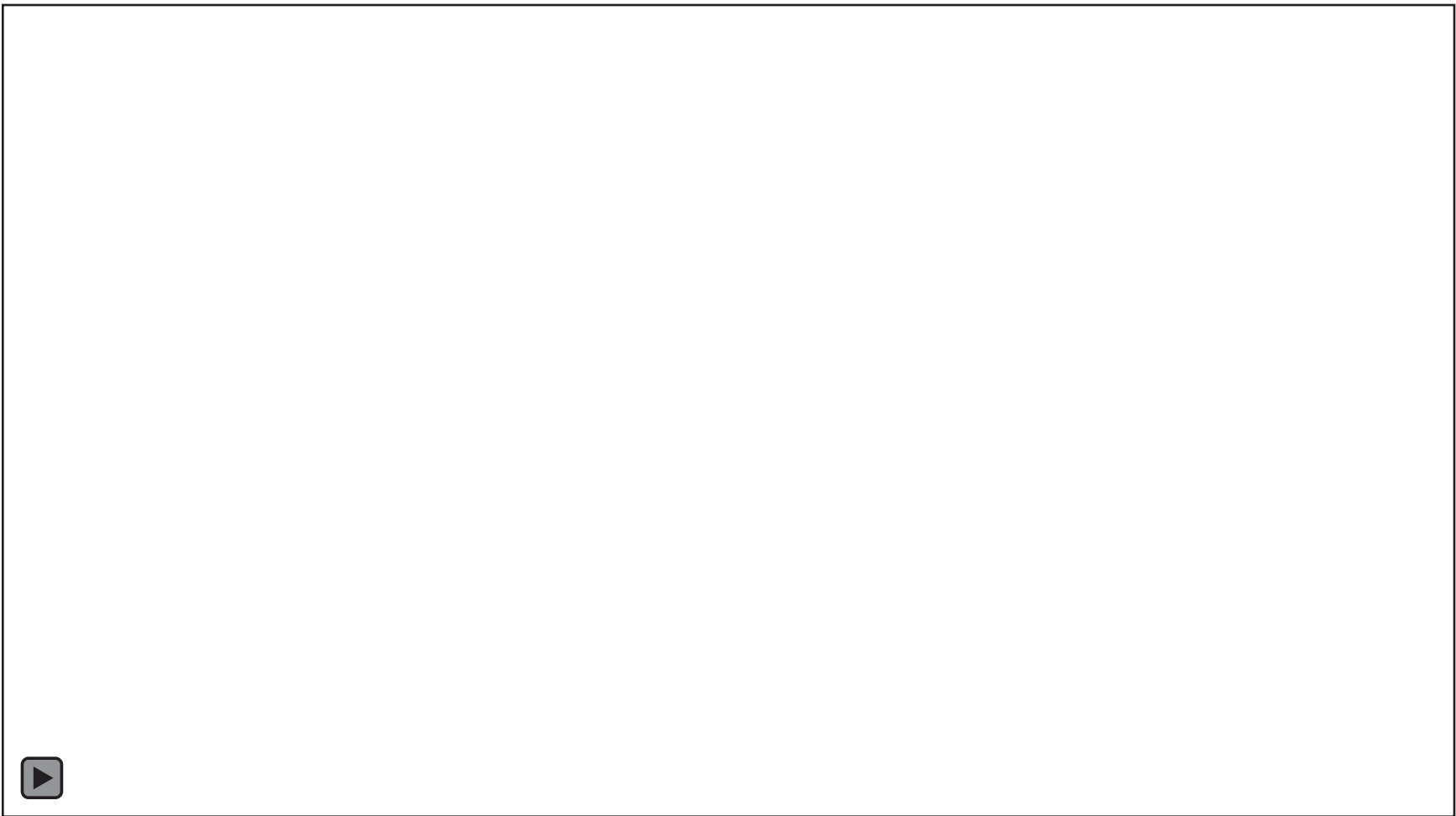

Pre-EQ Taps are Signal Processing
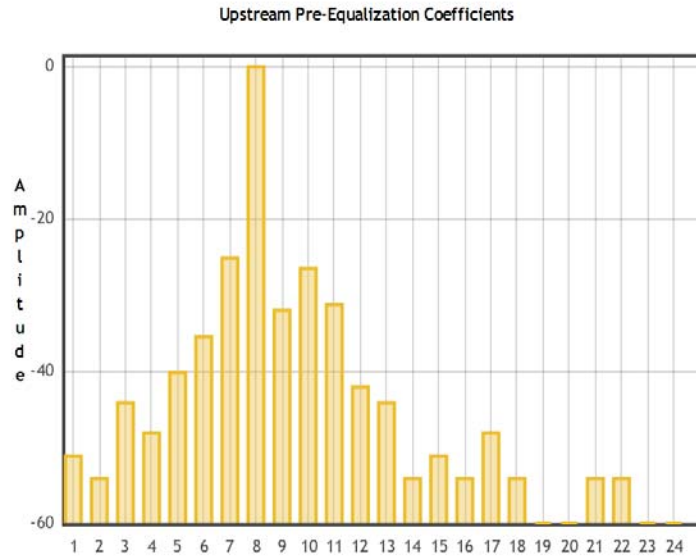
Mainline Taps are Physical, Used for Drops

Society of Cable Telecommunications Engineers

24 Tap DOCSIS Cable Modem

CM Pre-Equalization Demo

Equalizer Coefficients in Practice

Upstream Pre-Equalization Coefficients

Summary

▶ DOCSIS Pre-Equalization Available In All CMTS

– Recommended in v2.0 and higher Cable Modems only

▶ Applications Leveraging Pre-EQ will Change Maintenance Practices

– Reduce maintenance costs, improve efficiencies
– Improve subscriber quality of experience

▶ Combined with Full-Band Capture Provides a Comprehensive Echo System

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