

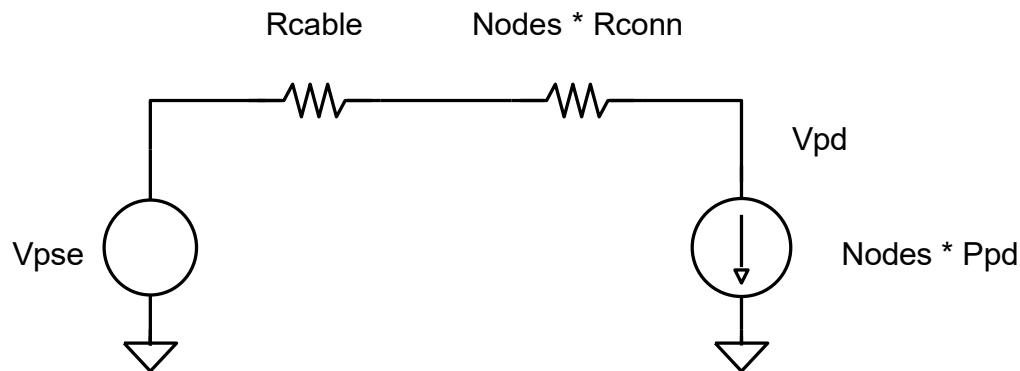
802.3da Power Development

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- ▶ Tentative agreement in Montreal to deliver limited power on data pairs
- ▶ Estimate Parameters That Affect Power Delivery
 - Channel Resistance
 - PD Loads
 - Supply Voltage
- ▶ Calculate Cable Drop
 - Show that power can be delivered w/ estimated parameters
- ▶ Achieve Consensus on the Power Parameters
- ▶ Define PSE / PD attributes
 - In a future presentation
 - On/Off thresholds, inrush parameters, etc...

Parameter Estimations

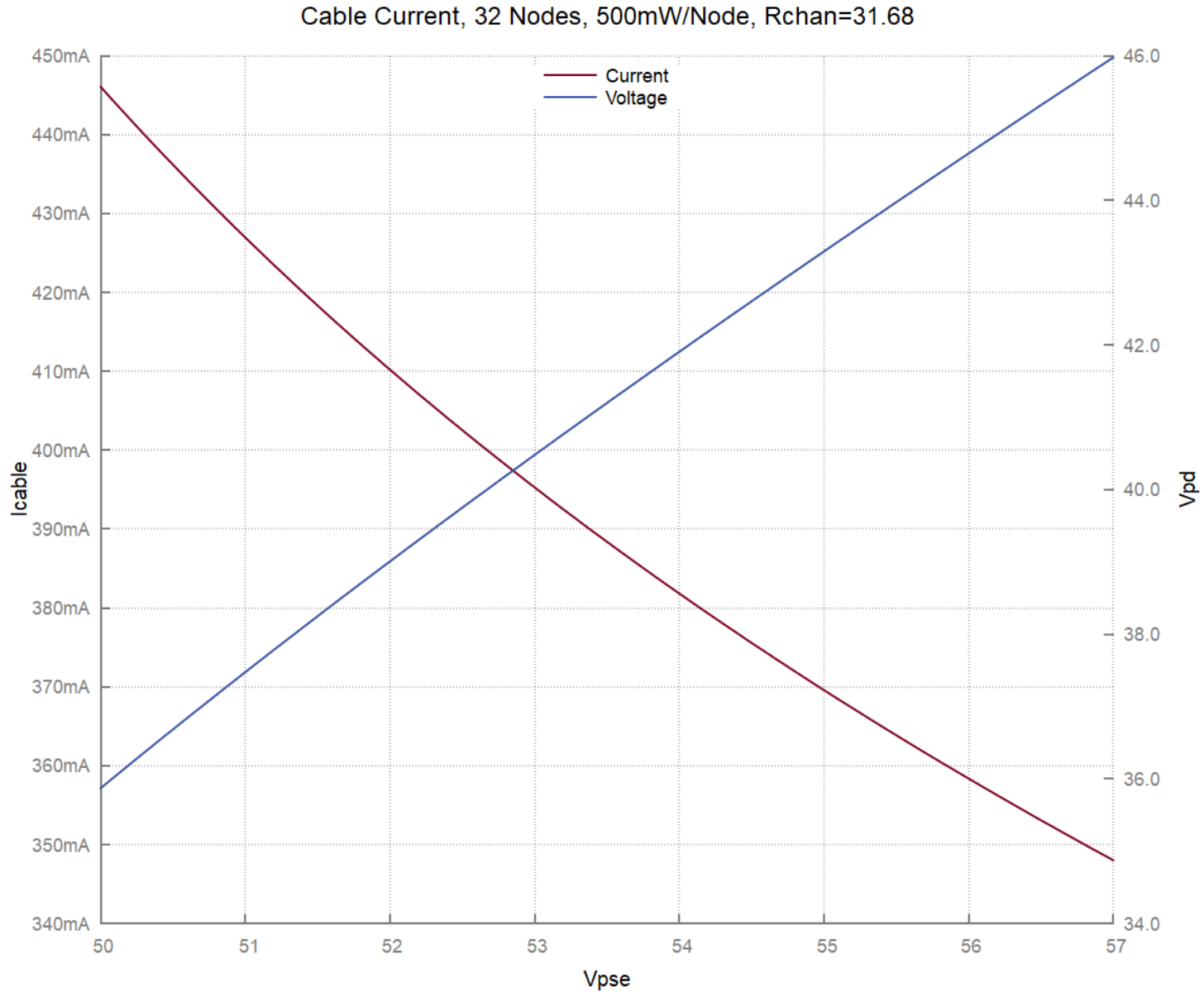
Symbol	Parameter	Value	Units
Nnodes	Number of Nodes	32	
Ppd	Power per Node	500	mW
Length	Mixing Segment Length	100	m
Gauge	Wire Gauge	24	AWG
Rconn	T-Connector Resistance	0.3	Ohm
Rcable	Length * Gauge @ 65C (loop resistance)	20.67	Ohm
Rchan	Nodes*Rconn + Rcable	31.68	Ohm
Vpse	Vpse,min	50	V



$$I_{cable} = \frac{V_{pse} - \sqrt{V_{pse}^2 - 4 * P_{pd} * R_{chan}}}{2 * R_{chan}}$$

*Full current flowing through all T-connectors over-simplifies the system

Full Load Power Transmission



- ▶ We can deliver power with these conditions:
 - 500mW / Node
 - 32 nodes (all at end of cable)
 - AWG24 Cable @ 65C
 - 100m
 - 50V-57V

- ▶ Group discussion on whether these parameters are acceptable for continued power development

Table 145C-3—Cable conductor DCR

AWG	Diameter (in)	Resistance per meter (Ω)	Resistance per 100 meter (Ω)	Resistance per 90 meter (Ω)
22	0.025346	0.059	5.9	5.31
23	0.022571	0.0744	7.44	6.7
24	0.0201	0.0938	9.38	8.44