

IEEE802.3poep Study Group Technical Aspects

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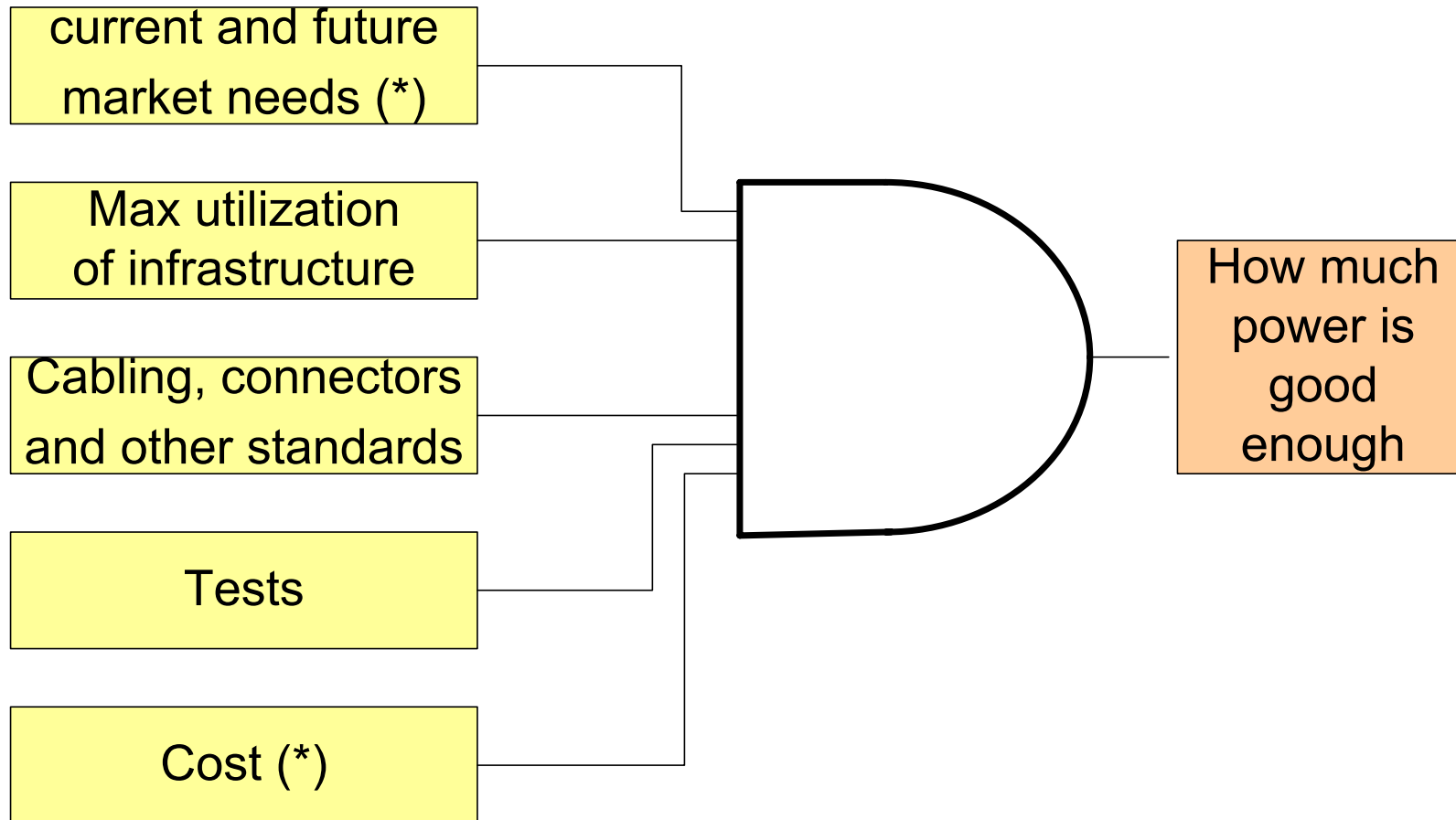
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Topics to discuss

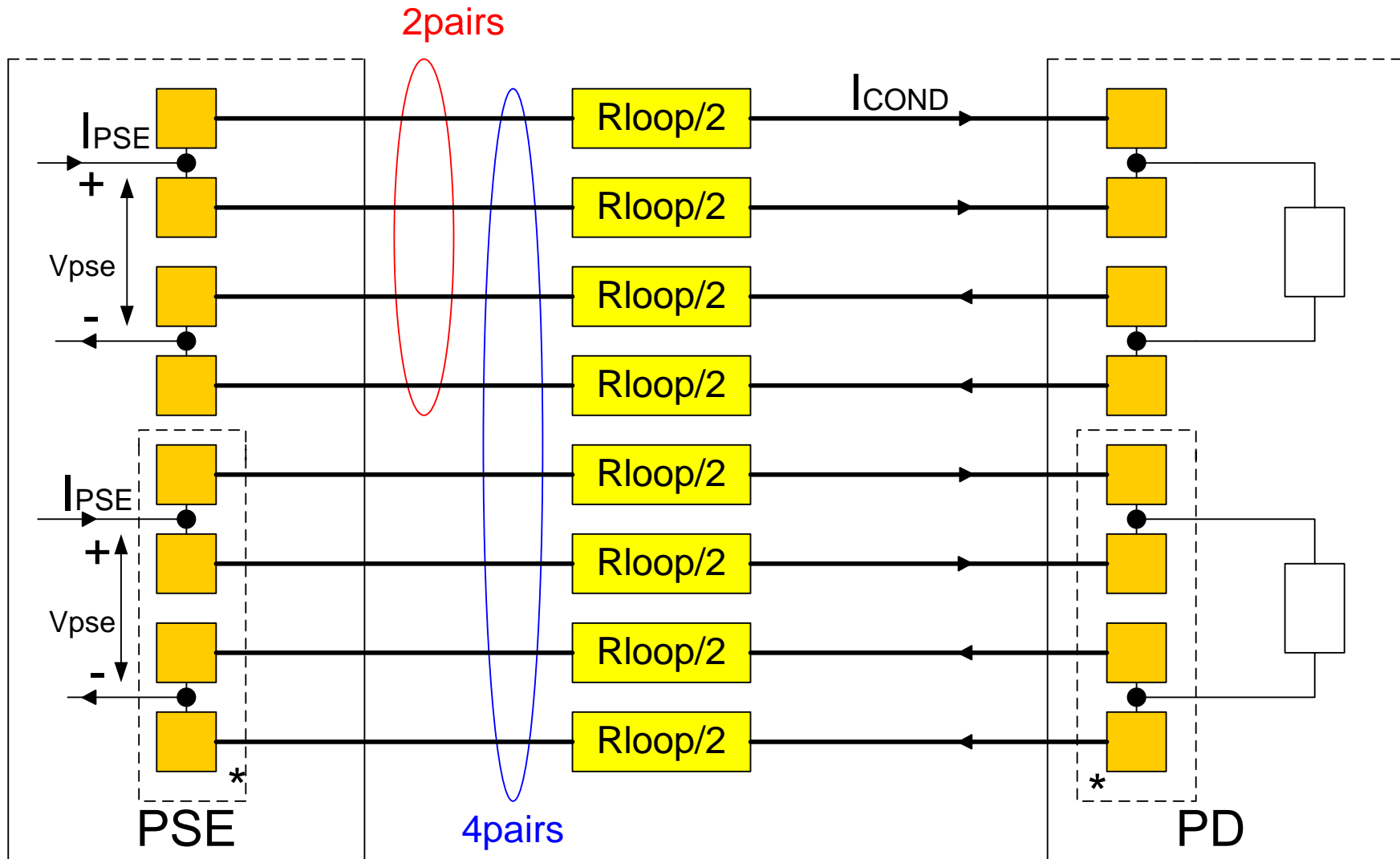
- How much power is high power
- Options for higher power
- Infrastructure limitations
- Unique distinction and backwards compatibility
- Meeting IEEE802.3 and other standards

How much power is good enough



- (*) Addressed in Economical Feasibility and Market related discussions

Options for higher power



* Data transformer for 1000BT. Otherwise pair is shorted at the PSE port and PD port

Options for higher power

■ 4pairs operation.

- Getting high power by powering both data and non-data pairs.

■ 2pairs operation.

- Getting the high power by increasing the current through the IEEE802.af current structure

Infrastructure limitations

■ Cables

- 420mA per conductor at 25C
- Derating factor is not known for cables
- If using connector derating factor: 197mA per conductor @ 60C

■ Connectors

- 0.75A per pin at 60C

■ Further work is required for:

- Real cable derating factors in 2pairs and 4pairs operation
 - To verify max limitations
 - To set the margin for reliable operation
- Data transformer need to be evaluated when high power is achieved by increasing PSE port current by $I_{PSE} > 350\text{mA}$ (~700mA)
 - Saturation due to current imbalance
 - Data transformer required size to overcome current imbalance
 - Effect on data transformer cost

Unique distinction and backwards compatibility

- PoEp PSE should identify PoEp PD and IEEE802.3af PD
- IEEE802.3af PS should identify IEEE802.3af.
- Unique distinction requires meeting table A.
- There are several ways to meet this req.
 - Using classification method (class 4 etc)
 - Using detection method (other than 25K resistor)
 - Other methods

PSE	PD	Detection	Classification	Backward and forward compatibility
PoEp	802.3af	802.3af	802.3af	YES
PoEp	PoEp	802.3af	802.3af with class 4	YES
802.3af	802.3af	802.3af	802.3af	YES
802.3af	PoEp	802.3af	802.3af with class 4	Need to be addressed. (There are few solutions)

Meeting IEEE802.3 and other standards

- IEEE802.3af already designed to be compatible with IEEE802.3 and other related standard
- Other relevant standards such TIA/EIA and EN60950 (safety), other national and international standards are addressed as well
- PoEp as an enhancement to the IEEE802.3/af must comply as well

References

1. Call For Interest PoE- plus, Chris Diminico
http://www.ieee802.org/3/poep_study/public/nov04/DiMinico_1_1104.pdf
2. FCC PART 68
3. IEC 60603-7 TEMPERATURE DERATING FACTOR FOR CONNECTOR.
4. ANSI/TIA/EIA-568-A, Section 10.4.4.4, DC Resistance
5. IEC 60603-7 - current capacity for connectors
6. UL 1863 – connector voltage
7. UL1950 (IEC 60950) - Safety Extra-Low Voltage Circuits
8. UL1950 (IEC 60950) Equipment classified as a Limited Power Source in accordance with IEC publication 60950.