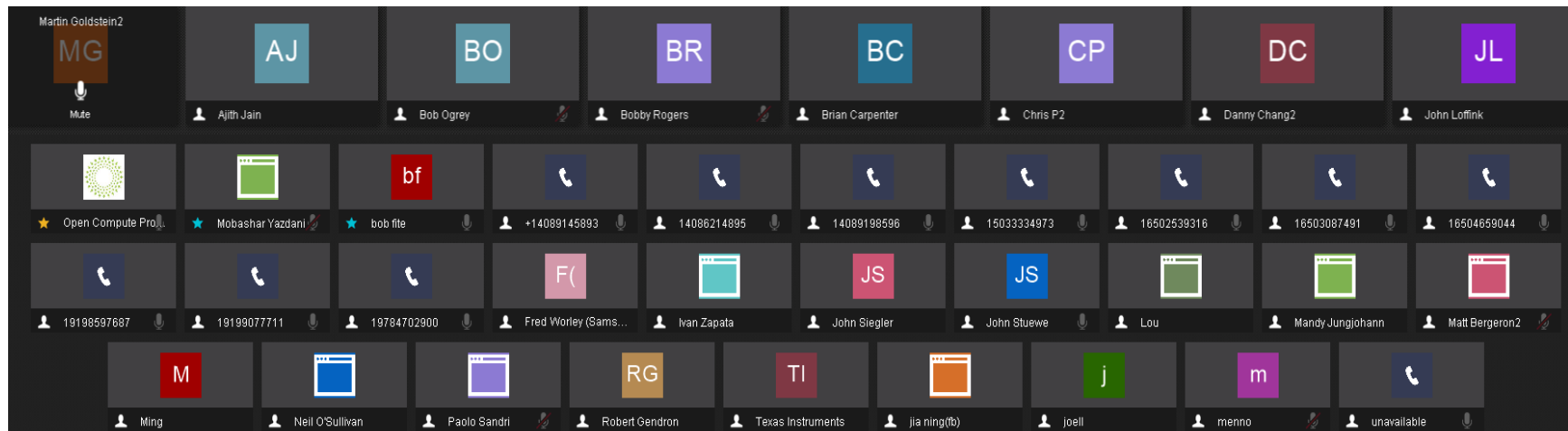


OCP server meeting
26-37 attendees

Chris P2, John Loffink, Mandy Juniohann, Martin, Ming
Neil 'Sullivan, bob fite, robert gendron, paolo Sandri
Bob Ogrey, Matt Bergond2, Brian Carpenter, Ajith Jain, Danny Chang2
Texas Instrument, Bobby Rogers, Fred Worley, Jia Ning



Screen clipping taken: 4/20/2016 9:06 AM

Topics: 48V on MOBO, 4-in-one M.2 card
Presentation Links

48V - Bob Fite, Vicor <http://files.opencompute.org/oc/public.php?service=files&t=ad2fb92635295193ca789c2e319c3b27>

48V ST Micro added 4/28 <http://files.opencompute.org/oc/public.php?service=files&t=dfe64d95987abe5c5d937a47702f50c4>

M.2 PCIe Carrier Card – Chris Petersen, Facebook

Presentation <http://files.opencompute.org/oc/public.php?service=files&t=829f39b1e6c7c2d65c26bca8c3b66867>

V0.3 spec <http://files.opencompute.org/oc/public.php?service=files&t=348059995f183d153e5b314eaa81e7a0>

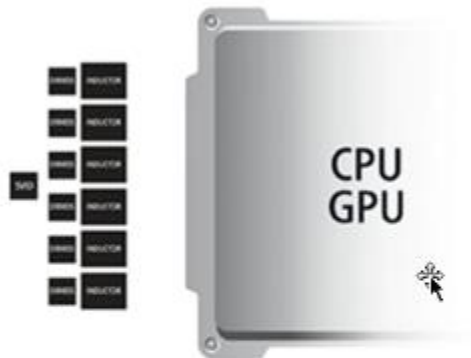
Bob Fite, ex Intel, currently at Vicor

48V POL/VTM is good, smaller, as efficient.

CPU power delivery, not on Intel CRB. One tech demo board, not a CRB.

One Component Near CPU

Conventional Multiphase



Vicor 48V Direct to CPU



Reduces valuable real estate near the CPU/GPU by 50% or more



No loss in performance by placing PRM & Digital Controller in non-critical board edge areas



Simplifies CPU I/O routing



Lower noise performance of the VTM removes any concerns of placement near the CPU or data lines near the power conversion

Current sense compatibility --> on 48V bus, better than 12V (Mark A --> Bob F)

Mark -- MOSFET sensing might be more accurate, concern in general. Bob --> will love 48V design

48 --> 12V for misc stuff, direct for CPU/Mem.

Mark A --> need to consider 12V. Vicor has 48V to 12V options as well.

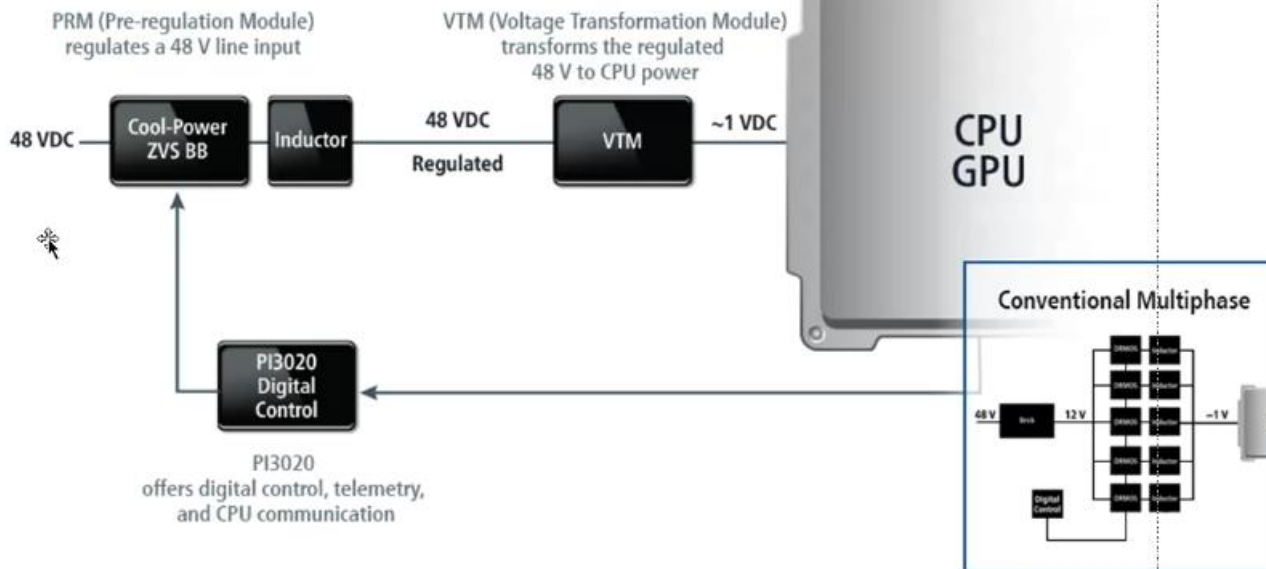
Ground isolation: Needed for -48V, not for 48V. No ground isolation in Vicor parts.

Google ?? Considered low voltage -- isolation not needed for safety. Adds cost and space and efficiency to enable this

VICOR

48 V Direct to CPU : Single Stage Conversion

4 Key Components Replace an Entire Collection of Conventional Devices



Bob O -- cost? More up-front cost, paid for in better efficiency over time.

Bob O -- other suppliers? Single-source today, others interested (including ST-Micro)

-- ST Micro design is isolated (?)

Mokshar (Google) -- most power controllers are single-source (not pad compatible)

Many 48V to POL exists today. 5% power usage on 12V board power, depends.

-- system architecture at the solution level.

Neil (Google) 48V system spec working through OCP process, not sure how long it will take.

-- will be clear on system requirements when the doc is approved.

Mark E -- moving from final system submissions to concept submissions (aka Barrel Eye)

John S -- what is Google submitting?

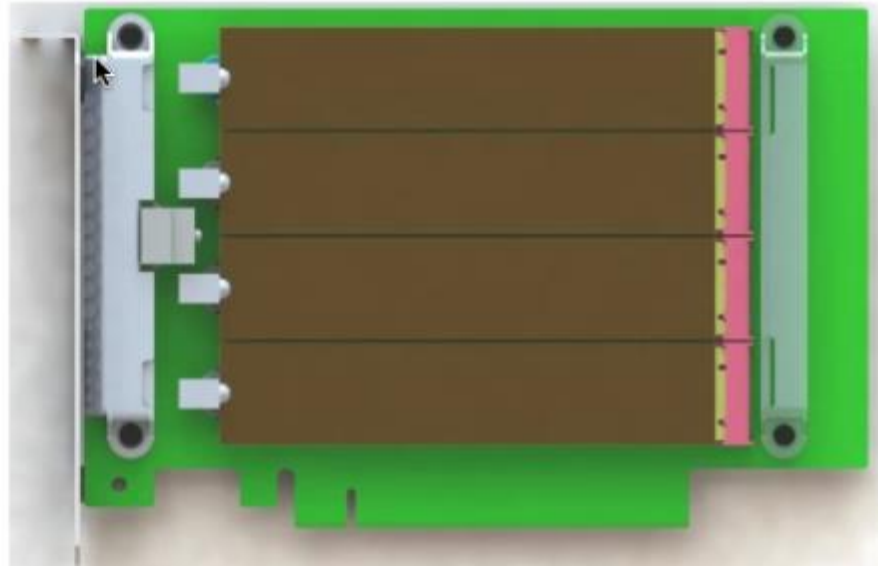
Addendum to OCP rack to add 48V distribution power shelf and enable 48V at the compute device

P9 (?) Open Power system with OCP as well.

4-in-one M.2 PCIe card -- Chris P

Design objectives

- No PCIe switches or re-drivers
- Future-proof
- Low cost
- PCIe FHHL CEM compliant



Repeat of slides covered at the OCP summit. 0.3 rev of the spec. Taped out some boards.
5.8mm height to enable M.2 cooling (top and bottom side)
Option to support heat spreader on the bottom side
Some PLP caps exceed 1.5mm; current design is 3.1mm, hope to push to 2mm to improve thermals