

# Power Distribution and Cooling for ATCA Extensions

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# Power Distribution Needs

- 400W for a single-slot board
- 800W for a multiple-slot board
- AC powered shelves
  - Target Data Center applications
  - AC Power supplies can be managed like other FRUs
    - PMbus is very common in plug-in power supplies
  - Can support a reduced voltage range to boards
    - Lower cost, higher efficiency power systems on boards
  - Can support N+1 and other redundant configurations
  - Current products supply over 8kW in a 1U power rack

# Power Distribution Needs

- A multiple-slot board only mates with one set of backplane connectors
  - Power Connector contact rating increased
- Electronic Fusing on boards
  - Limits potential damage from high power boards
  - Still need conventional fuse for safety protection
  - Requires an improved fuse design
- Power over Ethernet
  - Requires more power but not more cooling

# Cooling Needs

- Target Data Center applications
  - Reduced maximum ambient temperature
  - Increased  $\Delta T$  at the chips, increased MTBF
  - Reduced cooling cost
  - Need about 40 CFM/slot for 400W
  - New fan designs can do this
- Large air volume requires increased plenum height
  - The 12U-13U chassis height restrictions have eased