

AT&T NETWORK EQUIPMENT

Physical Design: Safety and Availability Requirements

Bon Pipkin

Role in new product approval:

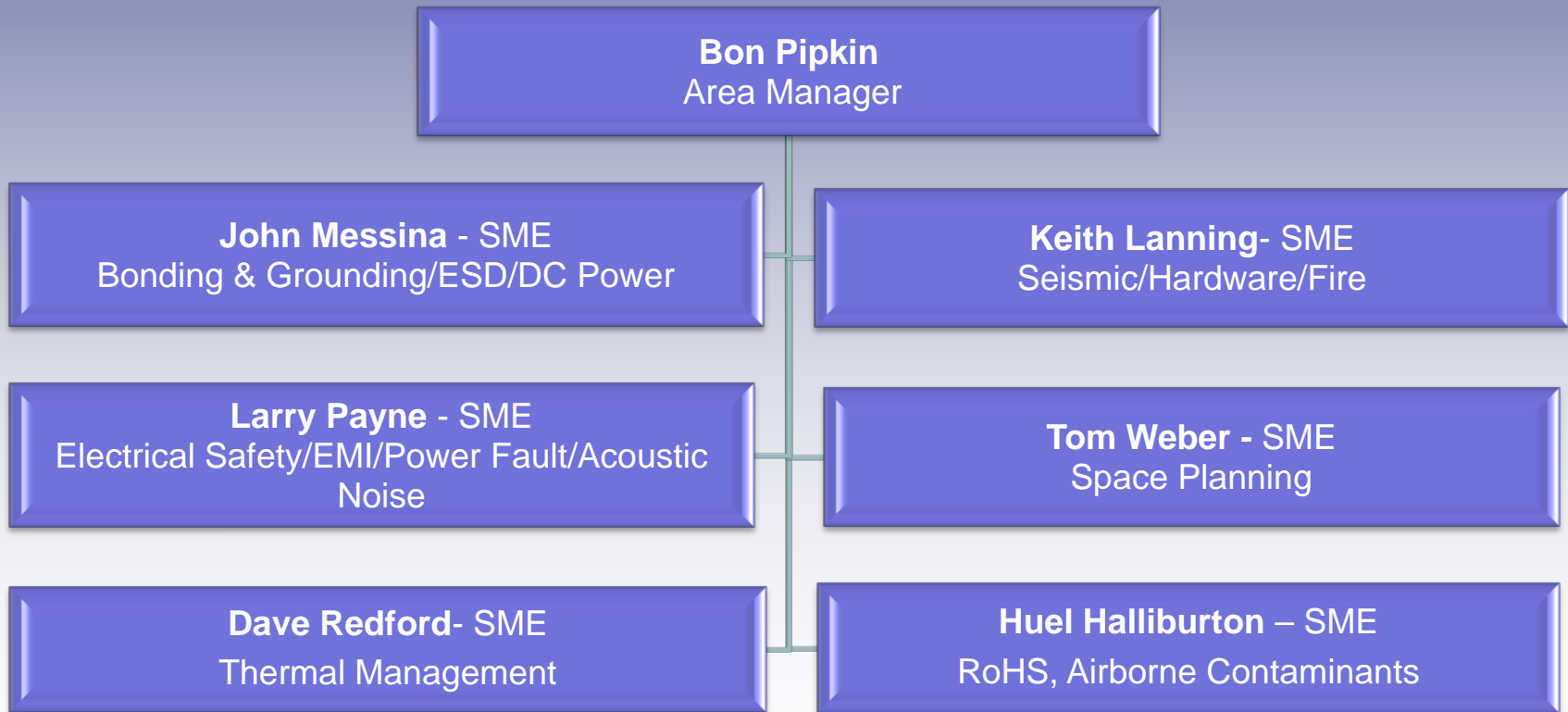
- **Safety and availability of equipment**
 - Communications environment
 - Availability under environmental stress
- **Seamless integration into network**
 - 10,000 plus locations
 - Power, size, air flow, acoustic noise, etc.

ATT-TP-76200: Physical Design (NEBS)

Network Equipment Power, Grounding, Environmental,
and Physical Design Requirements

Available at <https://ebiznet.sbc.com/sbcnebs>

ATT-TP-76200: Team



Equipment

- **Industry Standards:**
- **Set AT&T Standards:**
- **Verify AT&T Standards:**
- **Installation guidelines:**

Keith Lanning: Seismic
GR-63-CORE, ATIS
ATT-TP-76200
ATT-TP-76200
Product Approval Notice

Network

- **Generic Design Standards:**
- **Generic Install Standards:**
- **Tier IV Support:**

ATT-TP-76400
ATT-TP-76300
Outages/Earthquake, etc

Building

- **Generic Design Standards:**

ATT 812-000-003

Equipment Issues:

- Acoustic Noise Compliance
- Equipment Filters
- Thermal Management
- Pb-free Solder Joint Reliability

ATCA Issues:

- What issues?
- Basic NEBS
- System Level Tests
- Retest with new boards
- Thermal Management

ATCA Issues: Retest with New Boards

- System Level Test for each Configuration?
- Retest concerns:
 - Fire Spread
 - EMC
- Path forward:
 - Fire Spread: ATIS T1.319
 - EMC: ATCA Standards

ATCA Issues

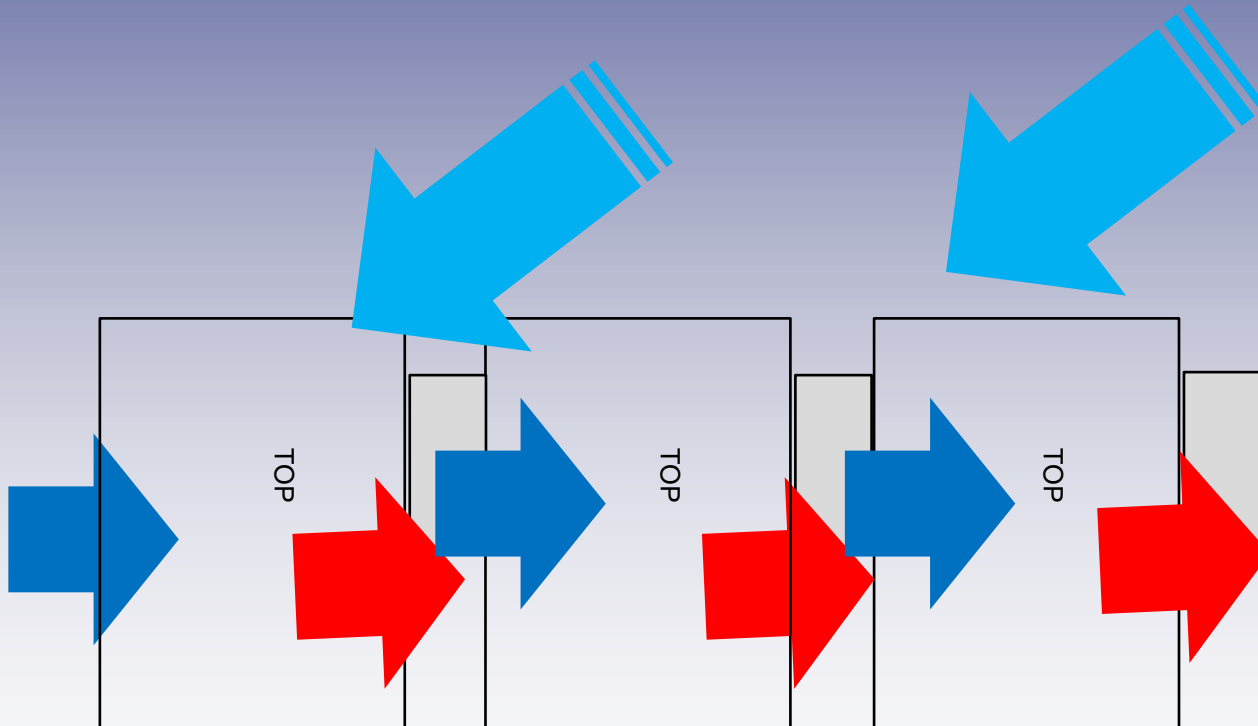
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- General Issues
- Change Management
 - PL
- Air Flow
- Distributed



**Partner with
Manufacturers**

ATCA Issues: Air Flow



Cabinet Deployment - Conflicts

COLD

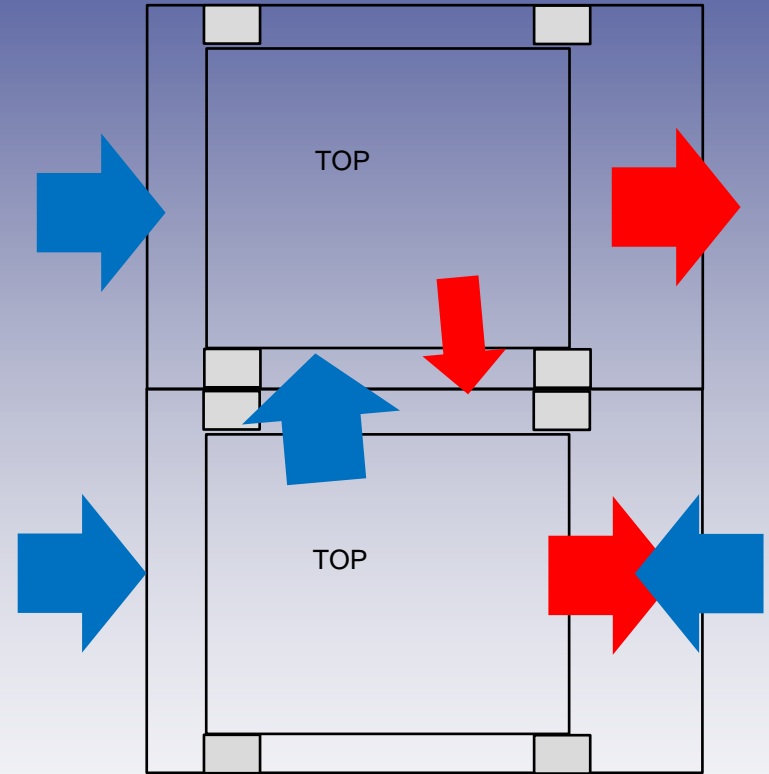
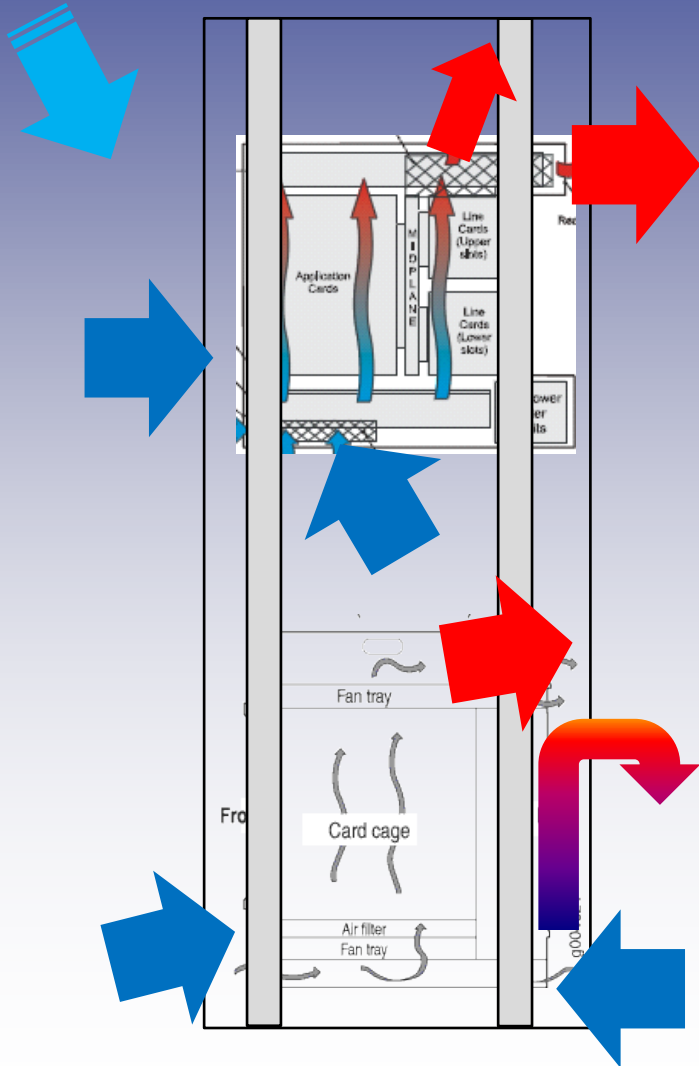
Side View

HOT

COLD

Top View

HOT



ATCA Issues: Air Flow

- Preferred Air Flow
 - Front to Rear
- Managing Alternative Air Flow
 - Baffles, snorkels



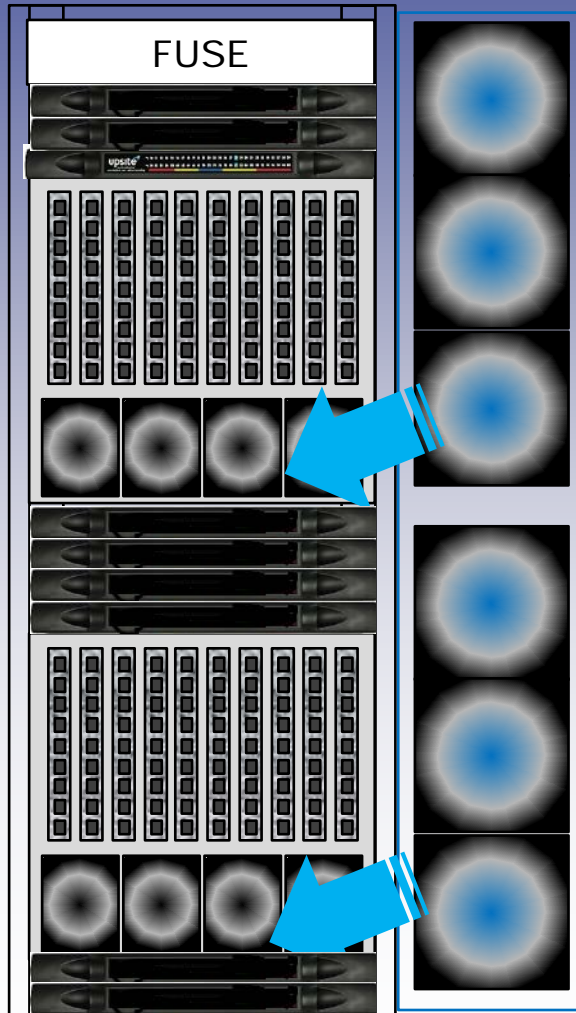
ATCA Issues: End User Thermal Management

- Traditional Telco Cooling 30 – 50W/sq.ft.
- Current ATCA thermal maximum
- Future ATCA thermal goals
- Other high heat products

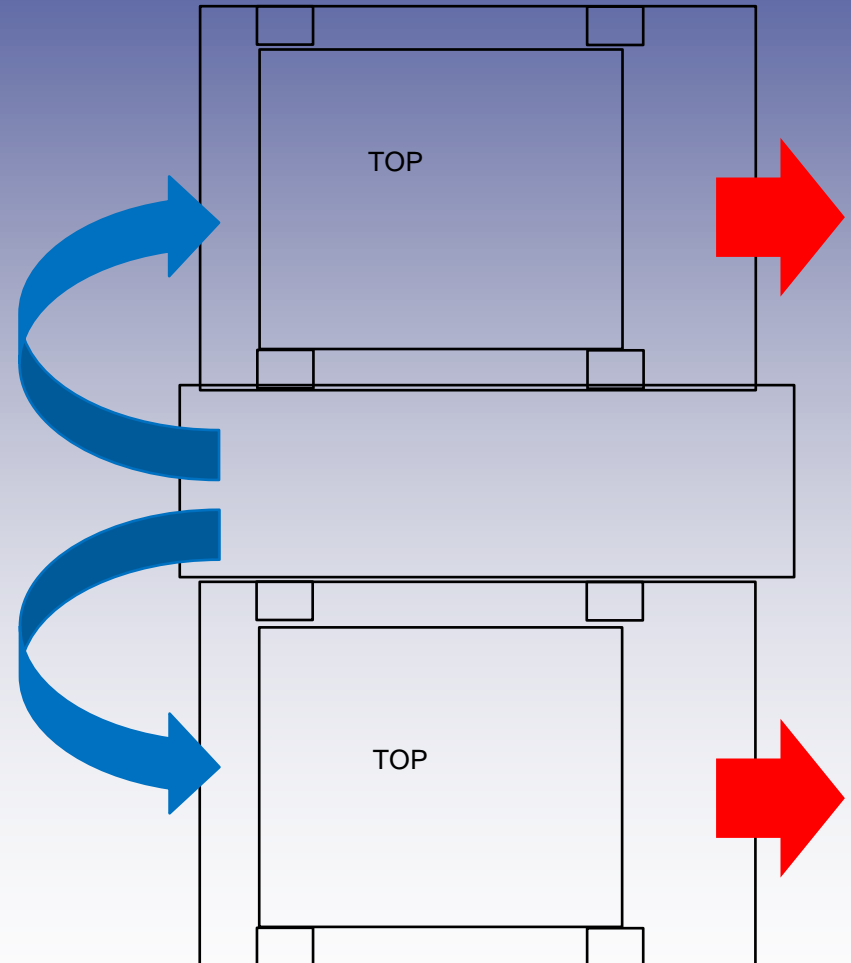
Distributed Refrigerant Cooling

Cabinets With In-Row Cooling

Front View

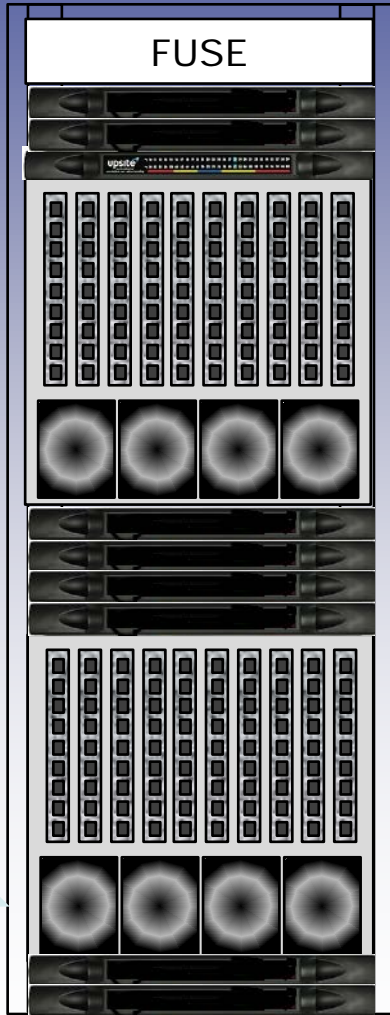


Top View

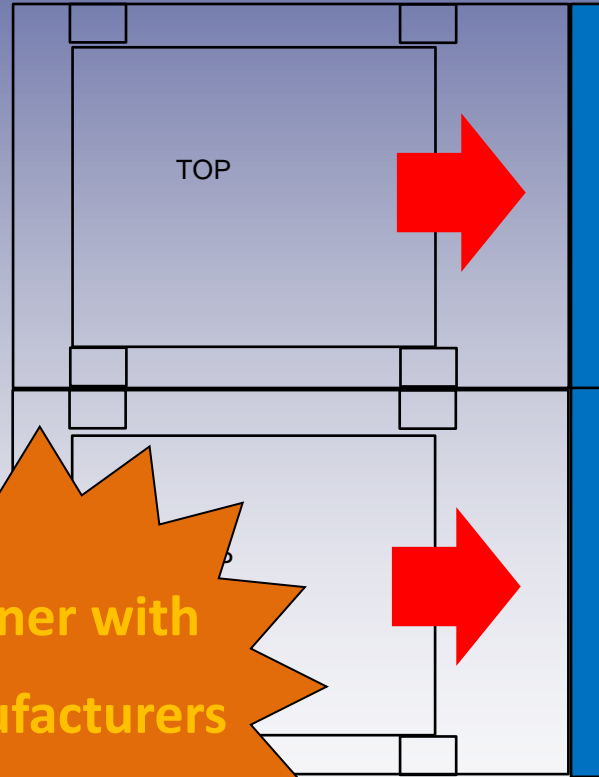


Cabinets With Back of Cabinet Cooling

Front View



Top View



Back Door

**Partner with
Manufacturers**

THANK YOU

END