



# Open Rack RSA Initiatives – Fall 2015

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October 9<sup>th</sup>, 2015

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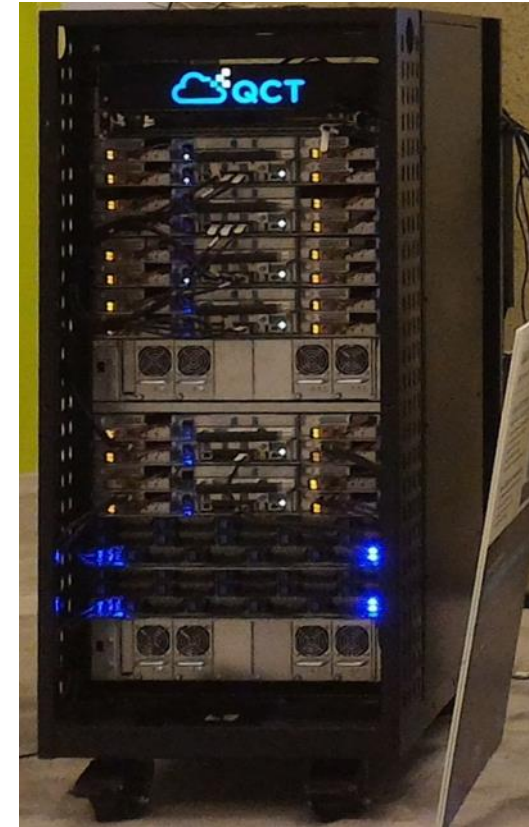
# Overview – RSA Demo

Intel and Quanta have developed a demo rack to showcase Intel technology and provide a software development vehicle for Rack Scale Architecture (RSA).

These demos have appeared at the past two Intel Developer forum events and the most recent OCP summit, and are in use at multiple Intel customer sites.

Features included in demo unit:

- 26 OU rack on casters
- **Rack Management Backplane** and Controller
- Two 11 OU Power Zones
- **Two 8 OU Shared Cooling Zones**
- 4 OU at Top-of-Rack for Switches, Optical Patch Panels, etc.



# Management Backplane Connection for Open Rack

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# Benefits of Rack-level Management with RSA

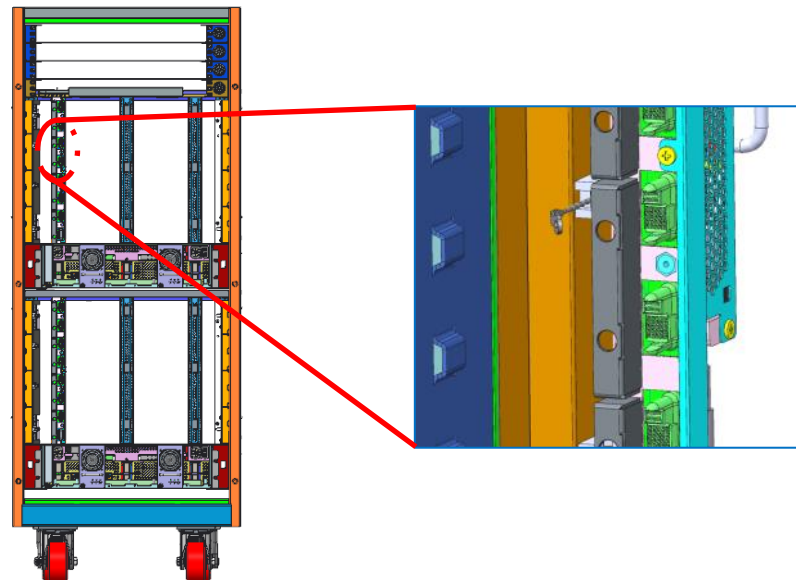
Open Rack does not currently address rack-level management. A central rack manager can provide benefits such as:

- Creation of hardware resource pools
- Standardized management interface through open API's
  - Multi-vendor interoperability
- Allows for easily upgradeable, modular multi-node systems
- Assign and balance system workloads
- Reduce capital costs (ex. Server utilization optimization, selective upgradeability)
- Gather and monitor rack-level usage data
- Provide rack fan control and optimize rack power allocation

# Rack Management in RSA Demo

Intel and Quanta developed a rack management system for the RSA demo unit consisting of:

- Rack manager unit
  - Demo used mini-PC
- Management backplane(s)
  - At LH bus bar location
- Blind-mate server-backplane connection
  - Featured in design guide



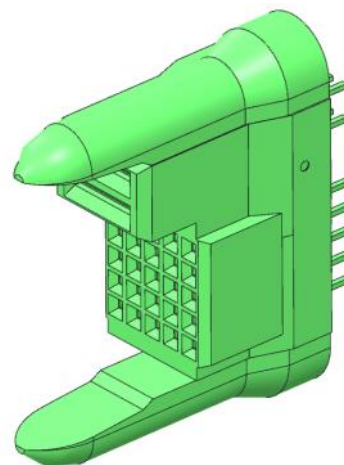
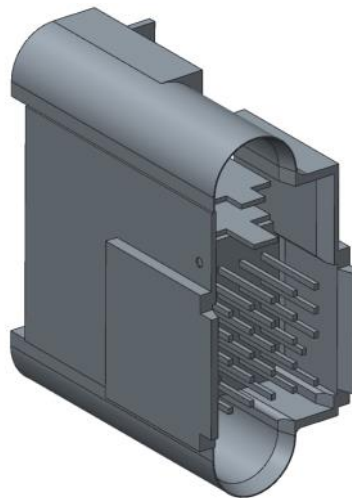
# Management Backplane Connection

The Design Guide for the Open Rack Management Backplane Connector describes the following:

- Key Mechanical Considerations
- Connector Details
- Connector Pin Out Definition
- Connector location in the Open Rack



Design Guide -  
MBP Connection



# Shared Cooling Solution for Open Rack

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# Overview – Shared Cooling Solution

Quanta and Intel collaborated on the design of a shared cooling zone for Open Rack. The demo utilizes rack-level fan speed control and cooled zones that included up to 16 server sleds and 4 network switches each.

A design guide is in process.

## Features:

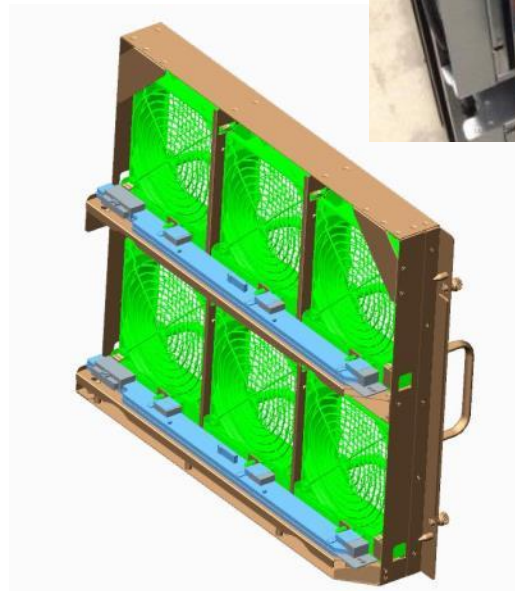
- Fan trays mounted to back of rack
- Modular, hot-pluggable fans
- (2) 8 OU sealed cooling zones



# Fan Tray

## Highlights:

- Quanta-designed
- 2 X 3 Fan Array for 8 OU cooling zone
- 5 + 1 Fan Redundancy
- Two PCBA's for signal/power distribution
- Service door for rack maintenance
- Powered by 12V bus bars



# Fan

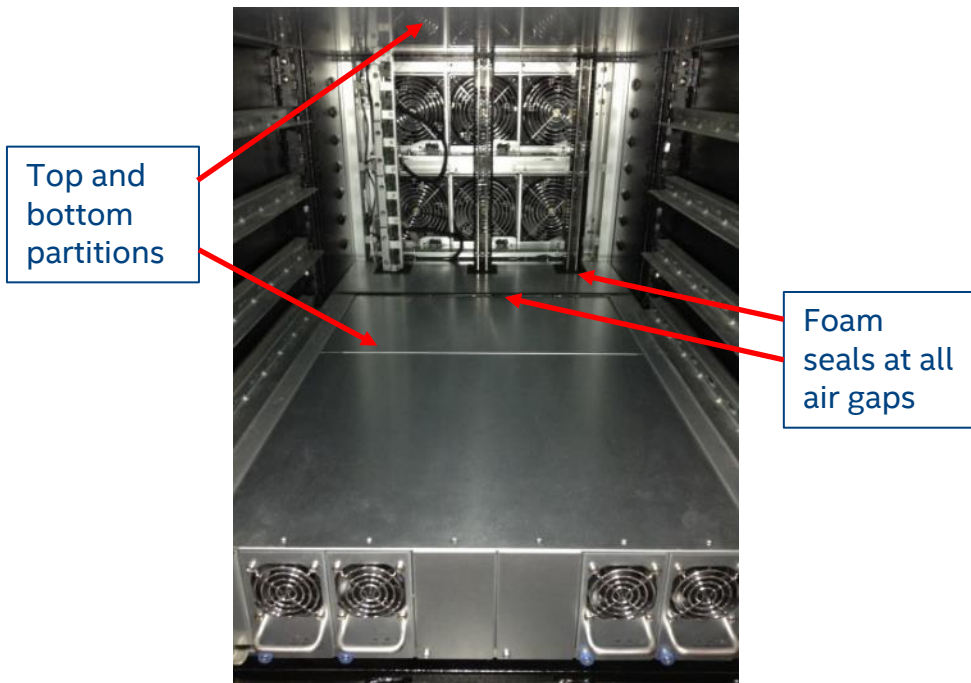
## Specs:

- 140 X 38 mm
- Hot-swappable, snaps into fan tray
- 8-pin connection for power, PWM, tach, and status LED signals



# Cooling Zone Considerations

Objective: To fully seal the cooling zone to prevent air leakage

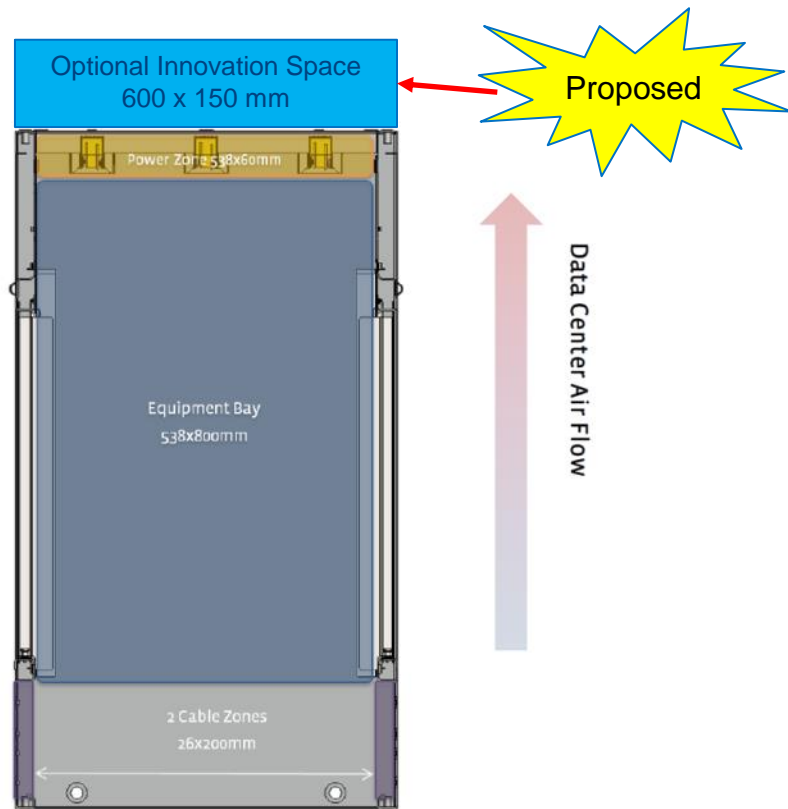


Dummy blanks available for unused tray positions.

# Back-of-Rack Space Allocation

Proposal: Add an optional rear innovation space to Figure 1 of the Open Rack Standard.

- Supports the mounting of rack-level fans or other systems at the back-of-rack
- Allows for innovation while maintaining Open Rack compliance



Cold-Aisle Side of the Data Center

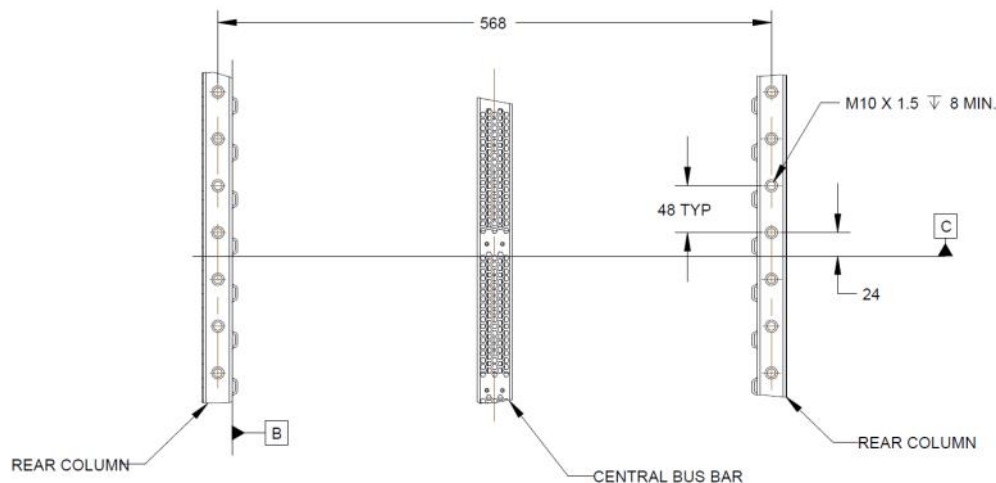
Figure 1: Top View of the Open Rack

# Mounting Pattern Proposal

Proposal: Update standard to include mounting features on the Open Rack rear columns

- Provides attachment points for rack fans or other equipment.
- Pattern repeats regardless of rack height.
- Seeking partnership with interested parties to further align on the design

EXAMPLE:



Rack Back View

