

Hot Time in the Big IDC

Cooling, Power and the Data Center

A NANOG Panel Discussion

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Better perspective from the top in independent tech research



Tier1Research

The Power and Cooling Crisis

In case you hadn't heard...

- Internet Data Centers are getting full
- Most of the “slack capacity” has been used up
- Devices are using more and more power
 - Low Power Density – Routers, full sized servers
 - Medium Power Density – 1U Servers, switches
 - High Power Density – Blade Servers
- Many data centers are “full” at 70-80% floor space utilized
- North America IDC occupancy is around 50%
 - Most sought-after space is around 70%



The Power and Cooling Crisis

In case you hadn't heard...

- There is a relationship between power and cooling
 - Devices are not 100% efficient
 - I^2R losses means that power becomes heat (conservation of energy)
 - Heat must be dissipated
- The ability to dissipate heat with normal cooling technologies is hitting the wall
 - New techniques must be utilized as we moved past 5kw/rack



The Power and Cooling Crisis

This is confusing

- Some quick rules of thumb
- A rack or cabinet is a standard unit of space in the colo business – from 30-40 sqft per rack
- Power is measured in watts
- Many facilities do around 80-100 W/sqft. At 30 sq ft per rack, that's about 3KW/rack
- “High Power Density” facilities or pods can do 20KW per cabinet in some cases
- These are all average numbers, so YMMV



What we are going to talk about?

- How did we get here?
- What is the current situation?
- Where are we going?
- What technologies will we utilize for power and cooling moving forward?
- How will server hardware change?
- Will IDC's bill for power/cooling in different ways?
What about submetering?
- What does this mean to carrier, content providers, hosters, IDC operators, hardware vendors, etc?



Who's on Stage?

Hardware Vendors...

- Michael Laudon, Force10 Networks
- David Tsiang, Cisco
- Brad Turner, Juniper Networks
- Rob Snevery, Sun Microsystems

IDC Operators...

- Josh Snowhorn, Terremark
- Jay Park, Equinix
- Brian Young, Switch and Data

