

# New data center cooling technologies



*NANOG 46 - Philadelphia, PA*



# Panel

- ✦ *Richard Donaldson - 6connect - CEO*
- ✦ *Tesh Durvasula - Telx - CMO / CBO*
- ✦ *David Pickut - Equinix - CTO*
- ✦ *Ben Stewart - Terremark - SVP Facility Engineering*



# Introduction

- ✦ *Why are we all investigating new cooling technologies? It's all about power. 2-3% of the power in the US is consumed by data centers, computer rooms, and engineering spaces. A large percentage of that usage is a direct result of cooling needs. Power usage and needs continue to grow. Those who really understand ROI for reduction in power consumption or slowing the rate of growth will have better margins.*



# Discussion points

- ✿ *Data collection methodologies (5 min)*
- ✿ *Quick overview of existing cooling technologies (2 min)*
- ✿ *New technologies (45 min)*
- ✿ *Bleeding edge technologies (5 min - time permitting)*



# Current

- ✿ *Perimeter cooling*
- ✿ *Hot aisle / cold aisle*
- ✿ *Chilled water loops and compressors*



# New

- ✦ *Close-coupled*
- ✦ *Containment*
- ✦ *Containers*
- ✦ *Improved CRAC units*
- ✦ *Free Cooling*
- ✦ *Raise data center floor temp*



✿ *Richard, Can you describe what PUE and CDiE are and some of the ways people are working on reducing them?*



- ✿ *Ben, What kind of new cooling technologies have you implemented at Terremark today? What are you looking to implement in the future and what have you observed to be the largest fiscal gain?*



- ★ *David, Can you describe how Equinix takes advantage of temperature sensors, what kinds of things you are doing with the data both real time and long term as well as future plans for what to do with that data?*
- ★ *(follow-up) Many people believe that air is somehow static, but as we know it's actually in flux like any ecosystem. How do outside conditions affect the actions you take in the data center?*



- ✦ *Tesh, When interacting with a prospect, how do cooling technologies impact the sale? Is being a green data center part of client demand? Are prospects asking for comparisons between respective data centers power consumption and cooling technologies in the sales process?*



- ✿ *Richard, You sit on the board of Data Center Pulse. Can you tell us a little about what that is and then describe some of the more cutting edge technologies you have been exposed to as part of this project?*



# Bleeding Edge

- ✦ *Absorption cooling*
- ✦ *Kyoto Cooling*
- ✦ *Data center on a ship*
- ✦ *Loop head pipe cooling*
- ✦ *Reuse or rejected heat*
- ✦ *Close-coupling of data processing load with cooling system operation*
- ✦ *Operations of equipment in environments with broad limits.  
(ASHARE TC9.9, warm the data centers)*



# Q&A