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OCP Ready Colocation Facility Pilot Program

Brevan Reyher, OCP Project Lead at Rackspace

Gerard Thibault, CTO at Kao Data

Program Overview

What it is…

- Guidelines Document
- Checklist and Scorecard
- OCP Marketplace



Program Overview

Why it is necessary…

- OCP Users experienced difficulties deploying in Colo Facilities
- Limited power capacity impacted deployment density
- Limited floor loading capacity hindered deployments



Program Overview

What it is not…

- OCP is not a certifying body or third-party auditor
- Data is self-reported and community reviewed
- No OCP or third-party audit performed
- *Claims must be customer verified through procurement process*

Recognition Process



1
Contact DC Facility Project Lead



2
Receive more info & scorecard



3
Complete self-audit using guidelines



4
Upload info & completed scorecard



5
Present to DC Facility Project Community



6
Receive approval from Incubation Committee



7
Complete requirements for Marketplace listing



Marketplace Requirements

- Must be a Corporate Member in good standing
- Must be a Colo Solution Provider (CSP)
- Executed legal agreements (Membership, CSP, Copyright)
- Completed self-audit and recognition process
- Paid applicable Membership and Solution Provider fees
- Published landing page on website for inbound OCP leads

Solution Provider Benefits

- OCP Corporate Logo associated with Membership level
- Google analytic reports provided quarterly from OCP team
- Contribution Points toward Membership requirements
- “OCP Ready” certification mark for website
- “OCP Solution Provider” logo
- Listing on OCP Marketplace



Pilot Program

- Focused on EMEA Region
- Kao Data (DC1) and Rackspace (LON5)
- OCP Corporate Members
- Facility design supports the OCP Tenets

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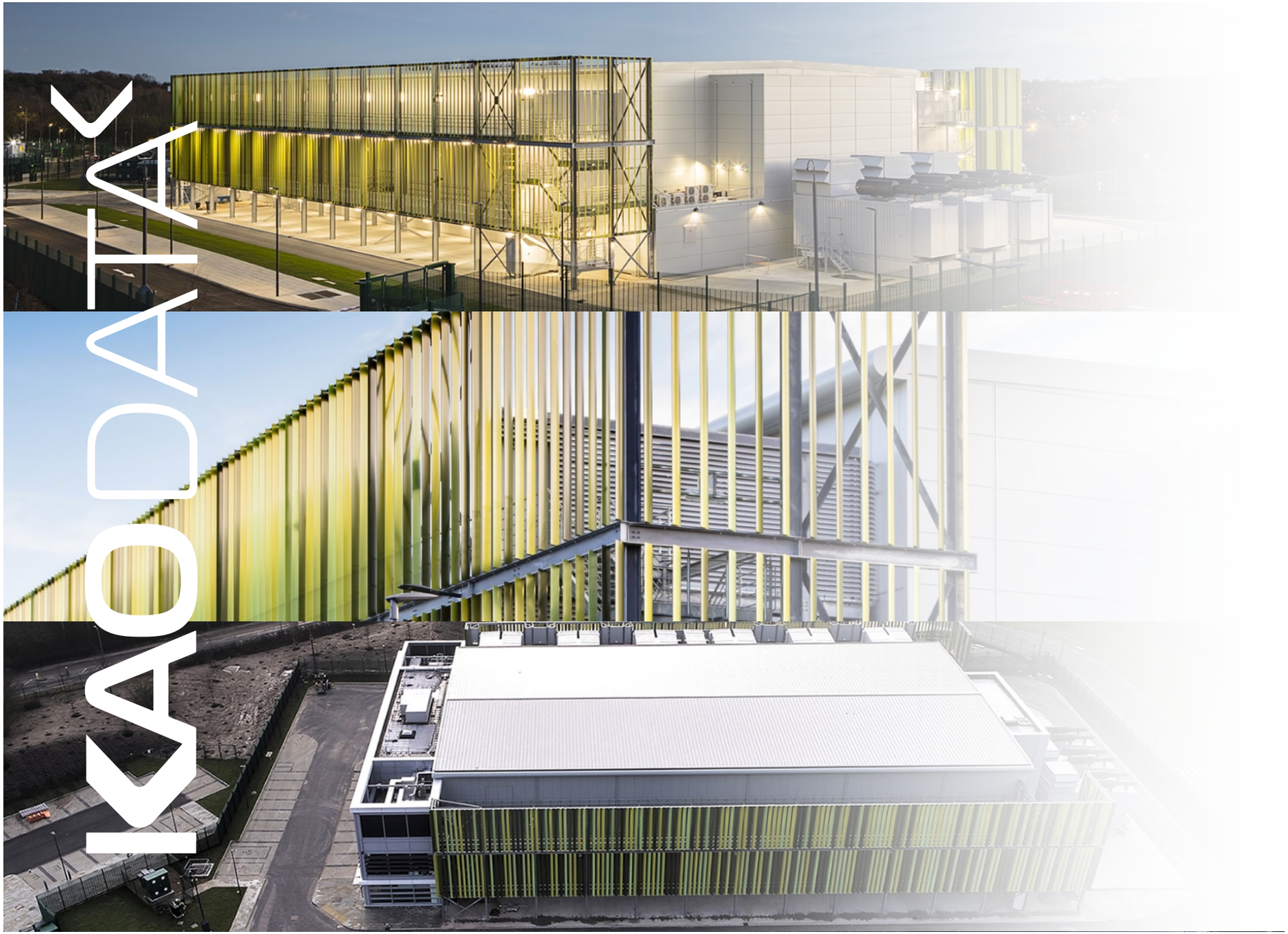
Program Introduction

- Initial meetings with Steve Helvie & John Laban of OCP
- Introduction of Pilot Program Concept & tour of facility
- Introduction to Data Center Facility Project
- Introduction to Mark Dansie – Checklist “Gatekeeper”

Program Introduction

- What is the purpose of the Checklist & Scorecard?
- Amalgamation of industry sector Best Practices
- ASHRAE, BICSI, TIA 942, EU Code of Conduct, Green Grid, etc. and performance targets for:
  - Architectural - IT Space Layout & Design
  - DC Facility Cooling
  - DC Facility Electrical Systems
  - DC Facility Monitoring & Control
  - DC Facilities Operation

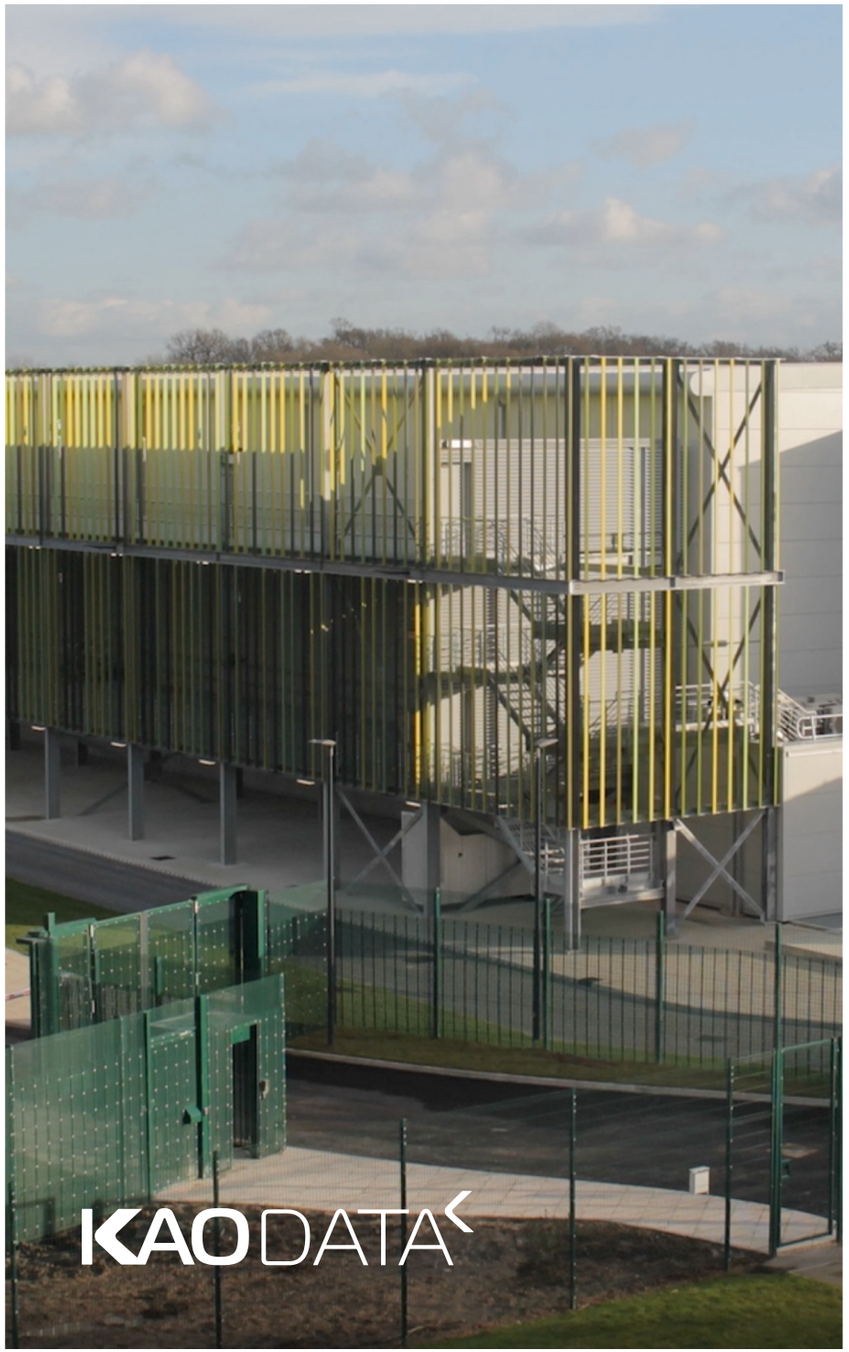




Schneider Electric

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Kao Data DC1

- New UK London Data Center market entrant
- DC1 - Launched Q1/2018
  - 52 week delivery schedule
- Total Campus capacity circa 36MW
- 4 x Data Centers (8.8MW each)
- 4 x Suites per DC (2.2 MW each)
- Total Campus IT (White Space) circa 13,550 m2
- 16 x 850 m2 Suites on Campus





DC Access

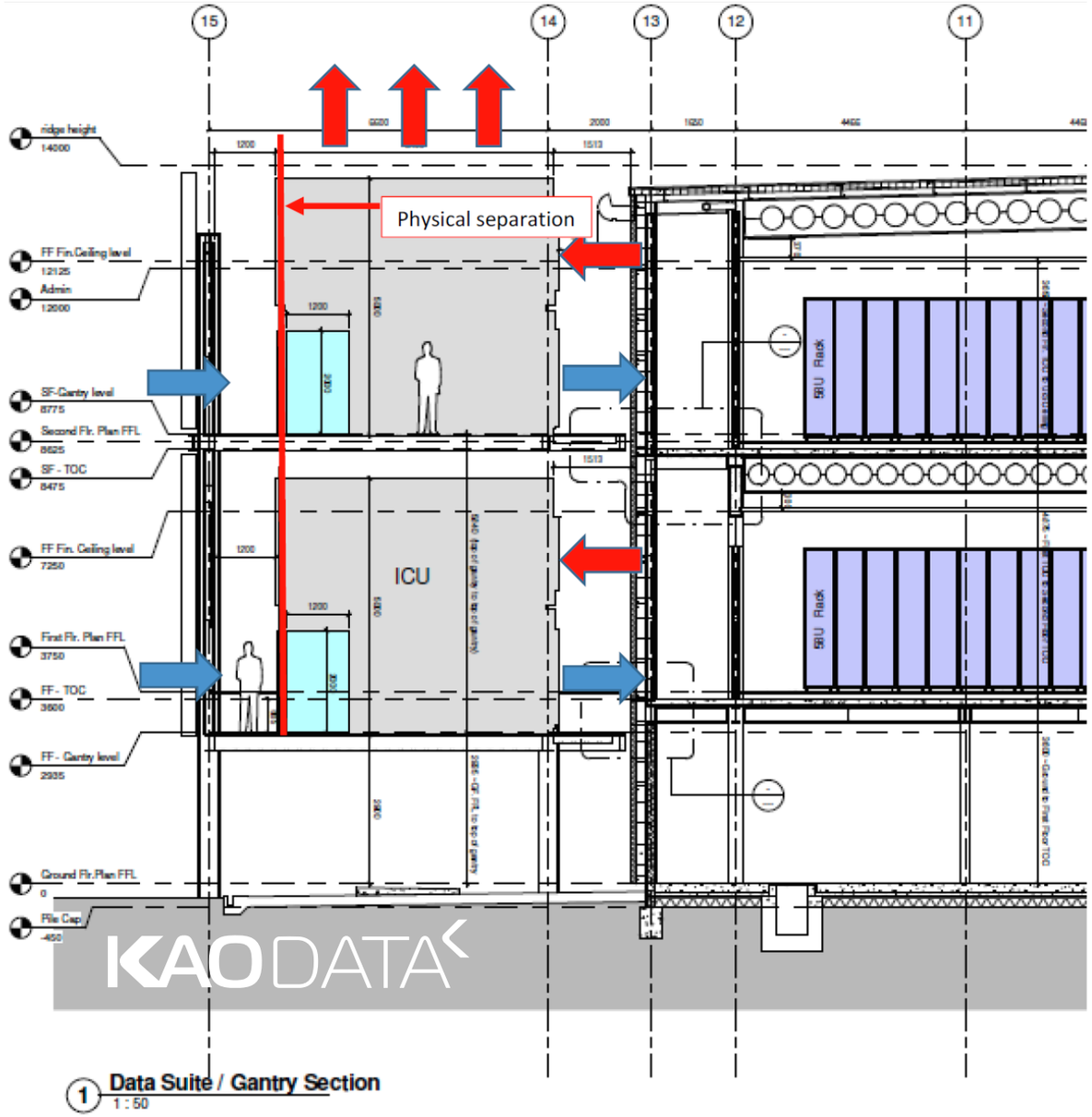
- Secure interlocked delivery bay
- Sized to take small batches of pre-built racks > 25
- Pathway to Technology Suites – up to 58U high racks
- De-Box room for rack acclimatization
- Goods lift – 2,500 kg – 3m clear





IT White Space

- Column free – no constraints
- Hot Aisle Containment – IT Technology Suites
- Concrete Slab Floor – 15kN/msq
- Overhead Busway Distribution
- OCP philosophy – cabinet/rack front and top access



DC Cooling Arrangement

- Air flow management
- Room void delivery – low impedance
- Hot ceiling plenum return
- Average 5kW over 442 racks
- 10kW and upwards achievable – subject to rack design

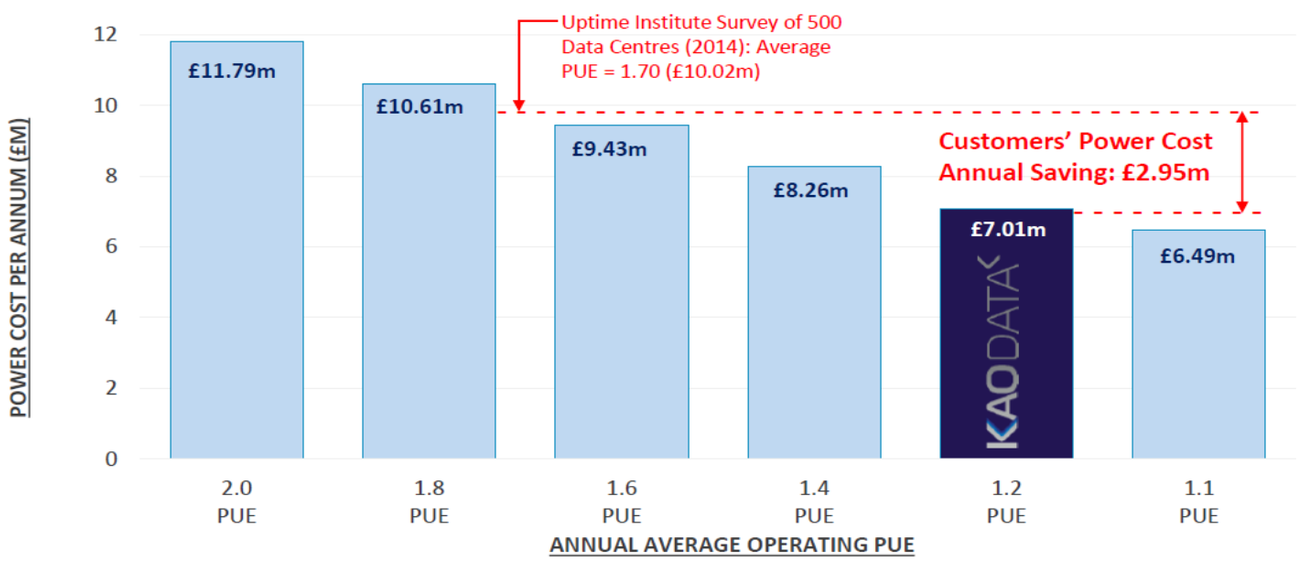


DC Cooling Performance

- Air flow management – IT Cells or Pods
  - DC Facility Cooling Efficiency - Flat PUE - load independent!
  - Percentage IT Load vs. PUE
    - 25% ~ 1.23
    - 50% ~ 1.14
    - 75% ~ 1.16
    - 100% ~ 1.21

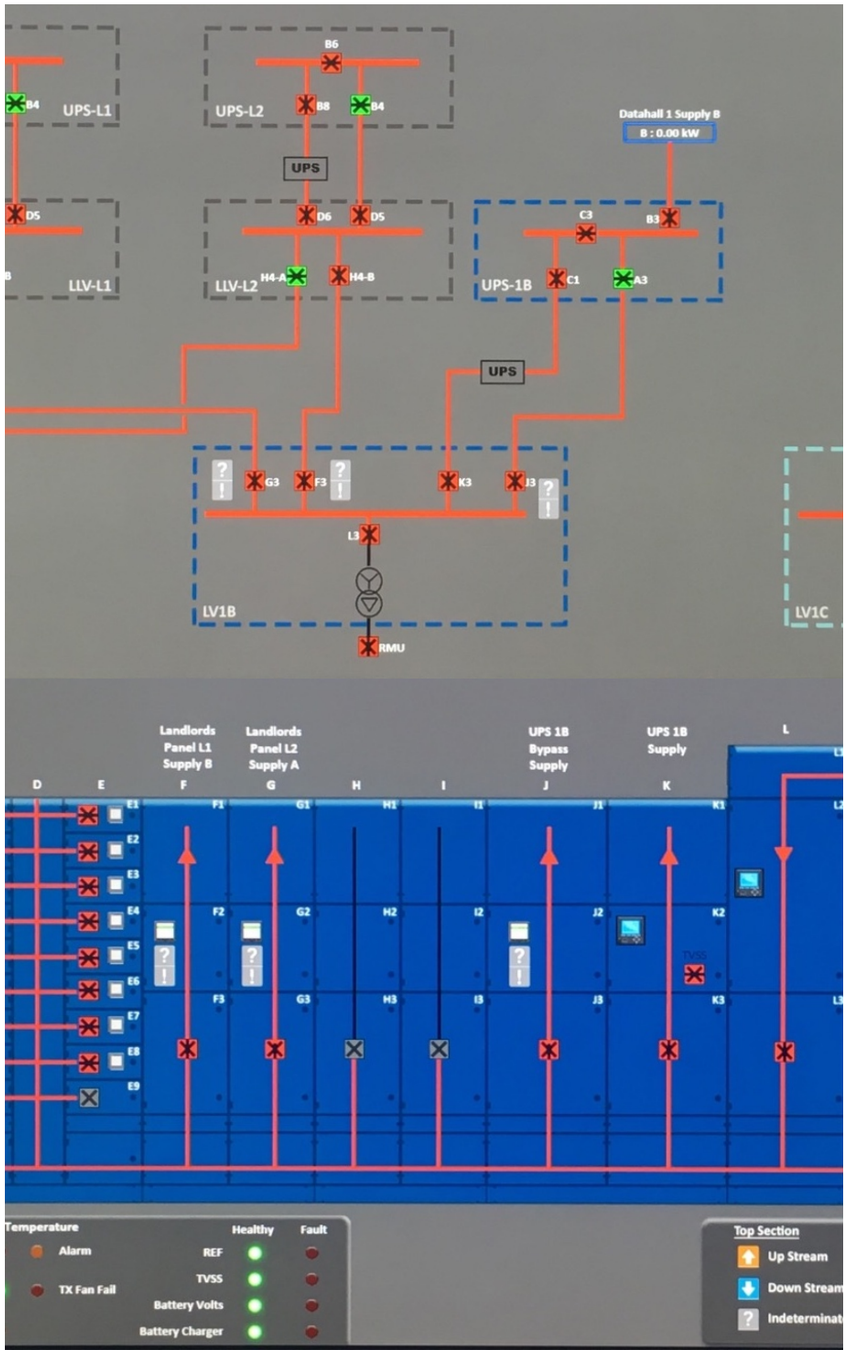
DC Cooling Performance

KAO DATA LONDON ONE - 8.8MW CAMPUS DATA CENTRE BUILDING CUSTOMER OPEX COST ADVANTAGE (REDUCED POWER USAGE)



ANALYSIS BASED ON:
- OPERATING 8760 HOURS PER YEAR
- 8800kW CAMPUS DATA CENTRE BUILDING AT 85% UTILISATION
- £0.09kWh POWER UTILITY COST

NOTES:
- UPTIME INSTITUTE SURVEY DATA: 1.89 (2011)1.80 (2012), 1.67 (2013), 1.70 (2014)



DC Facility Power Options

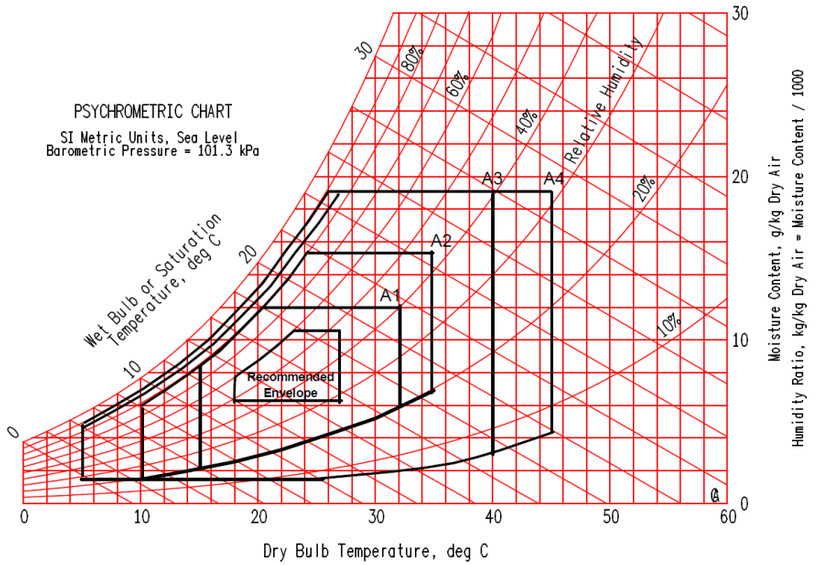
- Distributed Redundant LV architecture
- Generator backed raw mains or UPS options
- Critical Load Power Monitoring Systems
- Flexible UPS options – architecture and redundancy
- Central UPS vs. distributed Rack PSU & BBU





DC Facility Back-up Electrical Systems

- Centralized MV Generator back-up systems
- Per building approach – load monitoring & arbitrage
- Regular Testing
  - Live building load
  - Utility synchronization
  - No-break return from utility outage





Monitoring & Control

- Environmental Control – drives efficiency and TCO reduction
  - ASHRAE Recommended & Allowable limits – Class A1 for equipment range
  - PUE/WUE/CUE Optimization – PUE < 1.2
  - Environmental monitoring – Effective SLAs
- Temperature, humidity, airborne contaminants
  - Recommended - 18 to 27degC [65 to 80degF] ~ 40 to 60% RH
  - Allowable - 15 to 32degC [59 to 90degF] ~ 20 to 80% RH
  - Airborne contaminants – ISA 71.04
  - Silver and copper corrosion
    - G1 – Protect warranties
    - > G2 – take action!

DC Facilities Operation

Reduced operational costs – Reduced complexity & waste

- Cooling – no mechanical refrigeration
  - environmental protection – Global Warming potential reduction
  - Reduced power consumption, smaller transformers & cable
  - Reduced carbon usage and fuel use on back-up
  - Improved sustainability
- Increased availability – lower component and material count
  - Point of use ‘UPS’ – only support truly critical systems
  - Fewer power conversions – more reliability – less waste
  - Direct fans and air/air heat exchange (& water!) – more reliability



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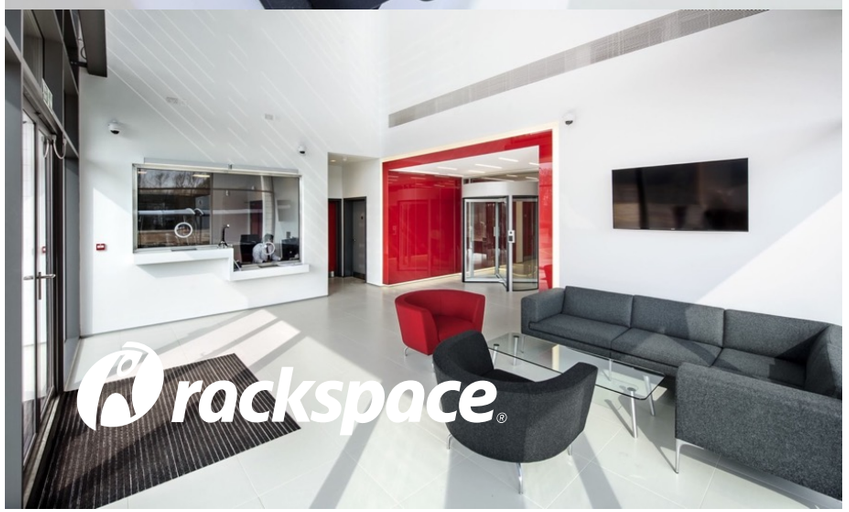
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PLATINUM



Crawley LON 5

- Open for Business Q2-2015
- 12 MW in 3 MW Data Halls
- Design PUE < 1.2
- Rain Water Harvesting





Security

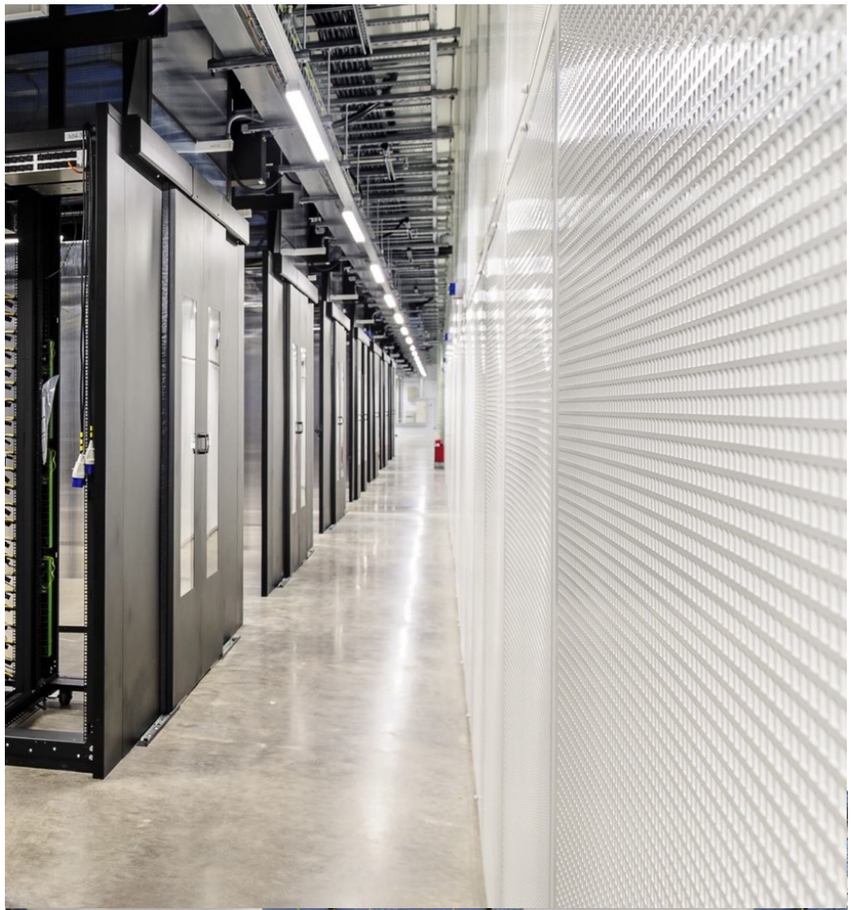
- 24/7/365 Security Operations
- Two-Factor Biometric Authentication
- Closed Circuit Video Monitoring and Retention

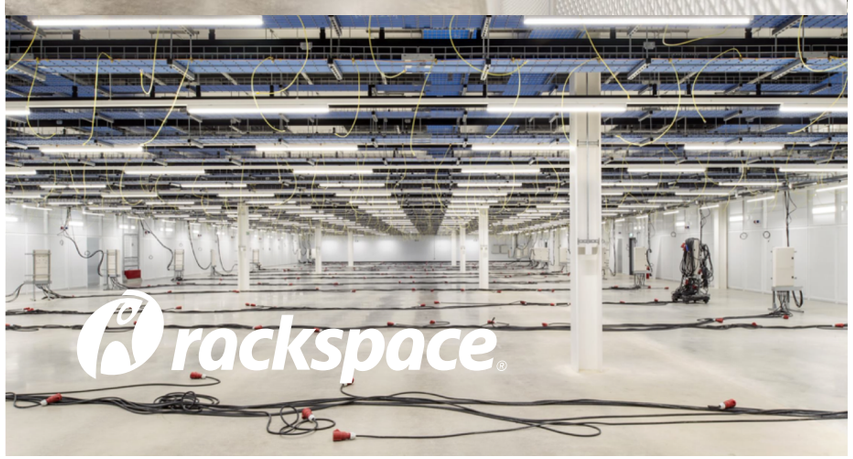




Lighting

- LED Lighting
- Light Tubes





DC Access and White Space

- Hot Aisle Containment
- Concrete Slab Floor
- Entire DC on Common Level
- Overhead Busway Distribution
- Overhead Cabling Distribution



Cooling

- Rooftop Mounted Cooling Units
- Indirect Adiabatic and Evaporative
- Compressor Free Cooling
- ASHRAE 2011 Thermal Guidelines
- Return Air Plenum – Increased Delta T





UPS/Generator

- Distributed Redundant N+1 Design
- Direct UPS to Busway Connections
- PDU Losses Eliminated
- Concurrent Maintainability





Operations

- World Class Data Center Operations
- All Backed by Fanatical Support
- Industry-Leading Facility Operations
- Carrier-Neutral Provider Connectivity
- 100% Network Uptime Guarantee

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Links

- Website
  - www.opencompute.org
- Data Center Facility Project Wiki
  - www.opencompute.org/wiki/Data_Center
- Colo Facility Guidelines for OCP Racks V2.0
  - TBD
- Colo Facility Guidelines Checklist V2.0
  - TBD
- Data Center Project Mailing List
  - lists.opencompute.org/mailman/listinfo/opencompute-datacenter



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