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FOR BUSINESS.
OCP Ready Colocation Facility Pilot Program

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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
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
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)

Uptime Institute Survey of 500 Data Centres (2014): Average PUE = 1.70 (£10.02m)

Customers’ Power Cost Annual Saving: £2.95m

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

NOTES:
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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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
DATA CENTER FACILITY

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
DATA CENTER FACILITY

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
Contacts

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Links

- Website
  - [www.opencompute.org](http://www.opencompute.org)

- Data Center Facility Project Wiki
  - [www.opencompute.org/wiki/Data_Center](http://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](http://lists.opencompute.org/mailman/listinfo/opencompute-datacenter)
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