



OPEN
Compute Project

Data Center Facility Project Consolidated Charter

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Revision History

Revision	Date	Name	Description
V0.1	2018.12.16	B. Reyher	Initial Draft for IC Rep Review
V0.2	2019.01.18	B. Reyher	Revised Draft for DCF Community Review
V0.3	2020.07.10	B. Reyher	Revised Draft for DCF Volunteer Leader Review
V0.4	2020.09.23	B. Reyher	Revised Draft for DCF Community Review
V0.5	2020.09.28	B. Reyher	Revised Draft for OCP Foundation Review
V0.6	2020.10.01	B. Reyher	Revised Draft for OCP Incubation Committee Review
V1.0			Final for Publication

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Overview

Designed in tandem with Open Compute Servers, the initial scope of the Data Center Facility Project maximized thermal and electrical efficiency and performance. The innovative data center design pushed beyond the established industry standards by partnering with server hardware design in the development of alternative operating setpoints and design criteria. This allowed for a significant operational benefit to be realized and spurred the industry and standards organizations to revisit the established assumptions.

The Data Center Facility Project facilitates collaboration in the data center facility community to support deployment of OCP Racks and Hardware, integrate the design and operations of the facility systems with the IT hardware, and develop innovations in the set of technologies that reduces energy consumption and cost, increases reliability and choice in the marketplace, and simplifies operations and maintenance.

The lifespan of the data center facility design and assets are greater than a factor of 10 longer than the refresh cycle for hardware. This does not allow for the same rapid innovation, and thus the leads to pressure to be future oriented, flexible, and scalable. The capital and operating costs of data centers, along with the long lifespan makes the efficiency of the design and operations a significant impact to the business.

Data Center Facility Project upholds and drives the OCP Tenets of Efficiency, Scalability, Openness, and Impact.

Scope

The Data Center Facility Project will focus its efforts in 6 functional areas of the data center:

1. Data Center Facility Power
2. Data Center Facility Cooling
3. Data Center Architectural Design
4. IT Space Layout and Design
5. Data Center Facility Monitoring and Control
6. Data Center Facilities Operation

In-Scope Technology Categories

The Data Center Facility Project intends to cover or address areas within the Technology Categories listed. Examples noted are not all encompassing.

Data Center Facility Power	Data Center Facility Cooling	Data Center Architectural Design
Electrical system design	Cooling system design	Site selection
Generator	Water-cooled chillers	Site planning
Switchgear	Air-cooled chillers	Building envelope
Transfer switch	Water-side economizers	Floorplan
UPS	Air-side economizers	Structural loading
PDU	Indirect adiabatic cooling	Spatial organization
Remote power panel	Direct air cooling	Operational efficiency
Plug-in busway	Refrigerants	BIM modeling
Transformer	Air containment	IT space layout

IT Space Layout and Design	Data Center Facility Monitoring and Control	Data Center Facilities Operation
Life safety codes	Equipment network capabilities	Operation and maintenance
Ingress/egress requirements	Monitoring and control	Staff training
Branch circuit presentation	API development and Redfish	Alerting and response
Telecommunications cabling	Profiles and telemetry	
Pathways	Security and access control	

Sub-projects

OCP Ready™ Facility Recognition Program

Overview

The OCP Ready™ Facility Recognition Program Sub-Project mission is to develop and maintain colocation facility guidelines and requirements to allow and support the deployment of OCP Open Racks and IT gear, keep in alignment with OCP hardware and facility design innovation and uphold the OCP tenets.

Scope

- Develop and maintain Colo Facility Guidelines for Deployment of Open Racks
- Develop and maintain the OCP Ready Colo Site Assessment
- Identify Colo Solution Providers and facilities that an OCP user can deploy OCP IT gear into without delay or complications.
- Align with the needs of the OCP Facility Recognition program

Key Focus Areas

- OCP Ready Facility Recognition Program
- OCP Colo Facility Guidelines for OCP Open Racks
- OCP Ready Colo Site Assessment requirements
- Colo Solution Provider lifecycle (pipeline, approval, renewal)
- OCP Ready Requirements for MDC
- OCP Ready Requirements for ACF

Modular Data Center (MDC)

Overview

The Modular Data Center (MDC) subproject mission is to develop an open specification for modular data centers to improve efficiency, reduce power consumption, and allow for flexible and scalable modular deployment.

Scope

- Optimized design of the Modular data center for OCP-hardware regarding maintainability
- Optimized design of the Modular data center for OCP-hardware regarding scalability
- Energy efficient power & cooling designs
- MVP (minimum viable product) of robustness regarding fire and burglary

Key Focus Areas

- MVP (minimum viable product) confirmed by end-users
- Maintainability (hardware and equipment)

- Scalability (production and deployment)
- Energy efficiency (cooling and power)
- Space optimization (using OCP racks)
- Transportability (truck, train, boat, crane)
- Cost reduction (CAPEX/OPEX)
- Capacity optimization (racks and power)
- Site requirements (as required for OCP Ready MDC Site)

Advanced Cooling Facility (ACF)

Overview

The Advanced Cooling Facilities (ACF) Subproject mission is to develop best practices, collaboration documents and common guidelines facilitating the integration of Advanced Cooling Solutions (ACS) into the Data Center Facility (DCF).

Scope

- Definition of acceptance criteria including mission critical reliability, scalability, adaptability, and open technology.
- Integration of ACS applications into existing cooling solutions (i.e. chilled water systems)
- Integration of ACS applications into new cooling solutions (i.e. heat reuse, dry coolers)
- Creation of OCP Ready Site Assessment parameters and criteria

Key Focus Areas

- Acceptance Criteria – Facility Water System Requirements
- Case Studies of Success & Best Practices integrating ACS into DCF
- Reference designs and best practice guidance for ACS applications in alignment with liquid coolant supply temperature requirements. Includes new builds or retrofits.
 - Reference design(s) for solutions integrated with Facilities Water Cooling loop
 - Reference design(s) for independent, elevated temperature loop with dry cooler and/or heat reuse application
- Applicability & Energy Benefits of ACS – Liquid Cooling Solutions

Out-of-Scope Technology Categories

The Data Center Facility Project does not intend to cover or address:

- Life Safety
- Physical Security
- Fire Detection and Suppression
- Equipment Safety
- Network Cabling Standards