ENI PoC #11
Progress reports

Rapporteur: (China Telecom)
Yu Zeng , Yannan Bai, Dan Xu, Xiangfeng Yuan, Xin Ke , Feng Wang

Co-Rapporteur:
Haining Wang (Intel), Lilei Wang (Asiainfo), Yue Wang(Samsung),
Aldo Artigiani (Huawei)

ENI PoC project #11: Intelligent Energy Management of DC

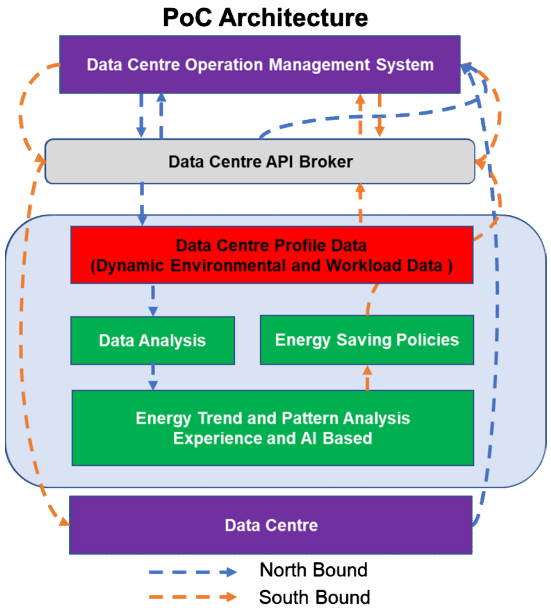
PoC Goals and PoC members tasks

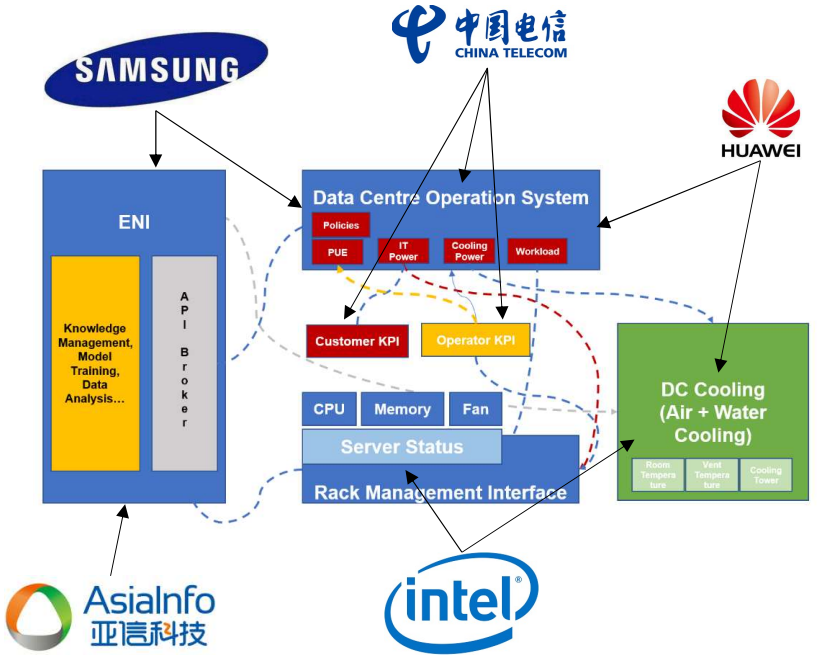
Host/Team Leader:

CHINA TELECOM

Team members:

intel, HUAWEI, SAMSUNG, AsiaInfo 亚信科技





- ✓ **PoC Project Goal #1:** DC profile analysis. Demonstrate the use of AI-based methods to analyze energy related data, e.g. DC dynamic environment and IT workload data etc..
- ✓ **PoC Project Goal #2:** Policy-based DC Energy Management. Demonstrate the use of AI algorithms to enable policy-based energy management..

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DC test trial progress

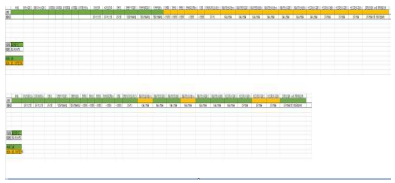
Task Plan

Task \ Date	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	July 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020
Specification						Initial First Results						Second Results
DC selection												
Site Survey												
Initial Test												
Data Collection												
Model Training												
Policy												
Energy Calculation												
Platform Development												

COVID19 AFFECTED

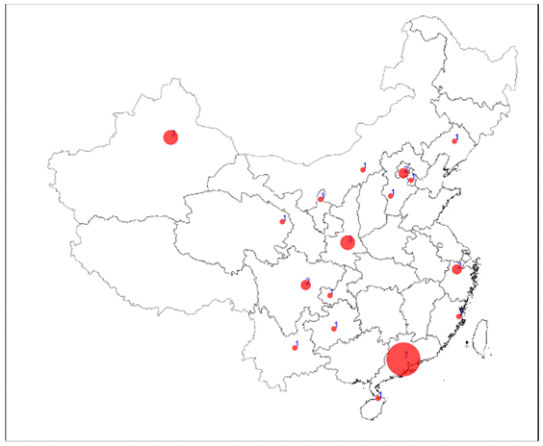
COVID19 UNAFFECTED

IDC AI Specification



Air & Water – Cooled DC Data Sheet

Test Trial Prep.



By end of May 2020, 17 cities applied to perform intelligent DC energy management test trial, with 31 independent DC sites, span across large geometry locations

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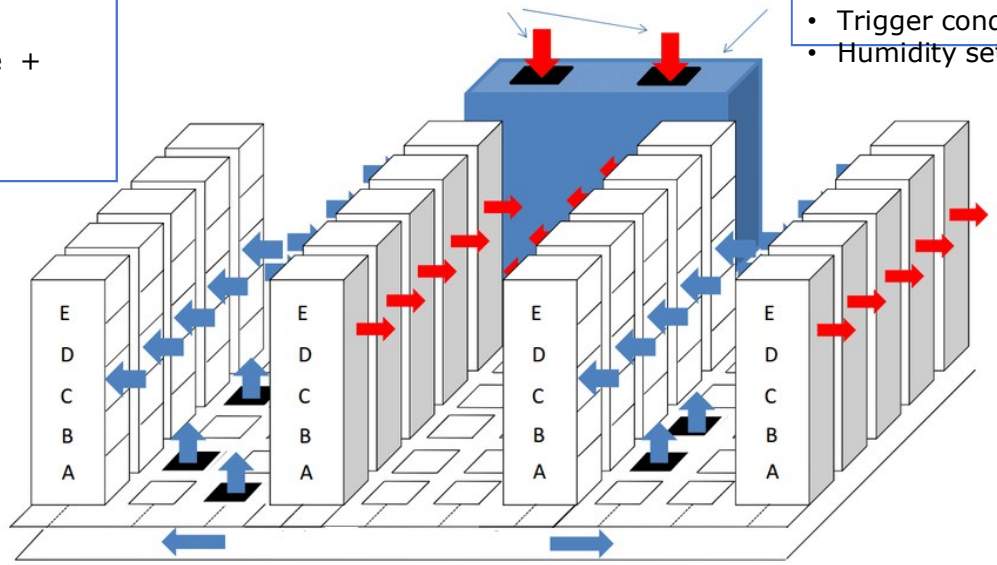
DC Heat Exchange

Data collection
- Rack load data
- Rack temperature Data
- Collection tunnel Temperature + Humidity Data
- Air condition setting data
- DC Site specification data

Level 2 exchange
Sealed cold air exchange with heat outside rack

Air Collection Tunnel

Precision air conditioning setting panel
- Load under various mode
- Trigger condition
- Humidity setting



Level 1 exchange
Rack heat exchange with cooling air inside rack

Floor cold air
Multi wind input

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ENI AI Model Training

Model: Air floor flow adjustment according to rack load, rack input temperature, air floor flow prediction and temperature.

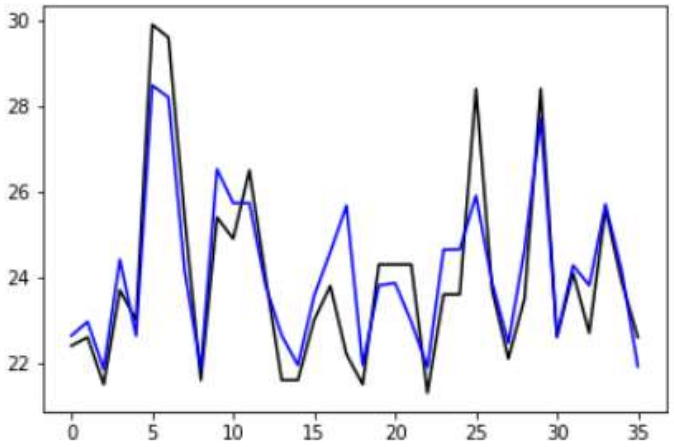
Input: Rack load, rack input air temperature

Output: Rack output air temperature

Type: Random forest

Scale: 180 sets (Single DC site data)

Results: **MAPE 0.03%**



Real time vs prediction air floor Temp. Prediction
(Y is temp. X is time)

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PoC Milestones and Current Progress

Current

Target

PoC Milestone	Stages/Milestone description	Target Date	Additional Info
P.S	PoC project submission	03/2020	Presentation during #ENI 13
P.TP.1	PoC Test Plan 1	12/2020	Initial testbed up and running
P.D1	PoC Demo 1	03/2021	Webinar demo at the ENI#18 plenary meeting
P.D2	PoC Demo 2	06/2021	Demo at shanghai MWC 2021
P.D3	PoC Demo 3	TBD	Demo at Intel AI summit
P.C1	PoC Expected Contribution 1	07/2021	Contributions to ENI use case
P.C2	PoC Expected Contribution 2	07/2021	Contributions to ENI requirement
P.C3	PoC Expected Contribution 4	09/2021	Contributions to ENI terminology
P.C4	PoC Expected Contribution 5	09/2021	Contributions to ENI data mechanism
P.R	PoC Report	09/2021	PoC-Project-End Feedback
P.E	PoC Project End	12/2021	Presented to ISG ENI for information
Note; The deadlines may subject to change according to covid-19 situation.			