



Free Cooling to Optimize Operational Expenditure

NetApp Bangalore Campus (NBC)

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Introduction

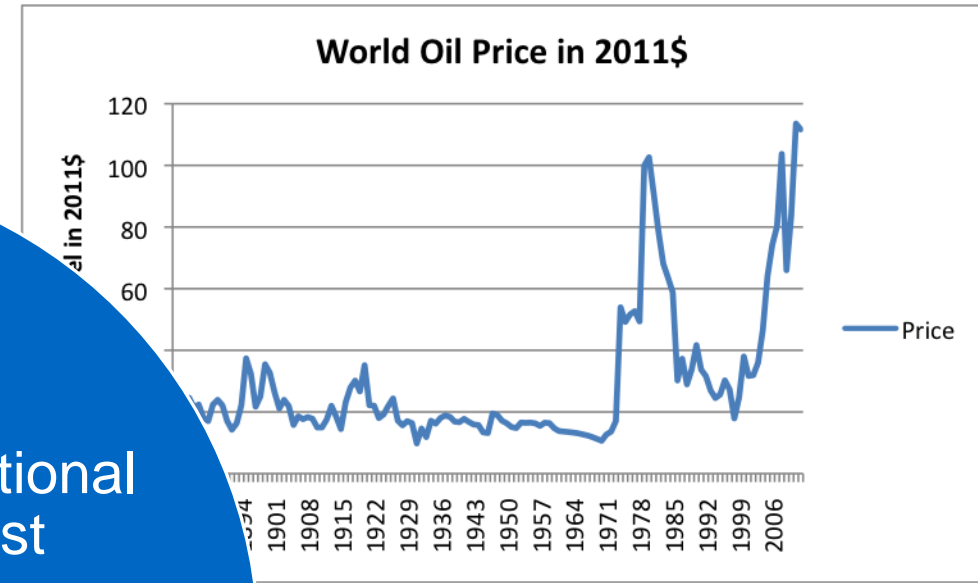
Global Scenario



Global Warming

Operational
Cost

Energy Crisis



NetApp Objectives

Design and Construction of New campus

“The NetApp India campus is built to embrace sustainability as a core value ”

- Mr. Deepak Visweswaraiah, Managing Director

Largest Consumer → Data centers

- Data Centers will keep on multiplying globally as dependence on Data will increase manifold

Goal

PUE of <1.3

Least impact to environment (Global warming)

NetApp Bangalore Campus

Hoodi, Bangalore



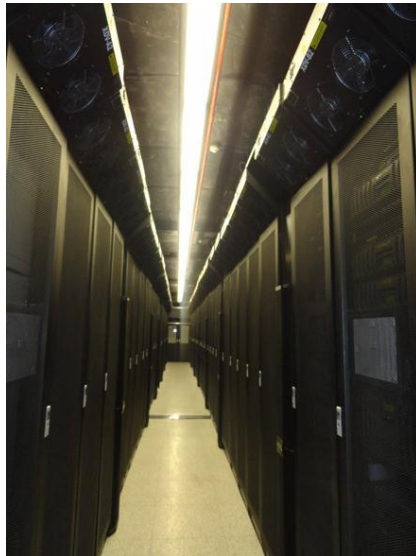
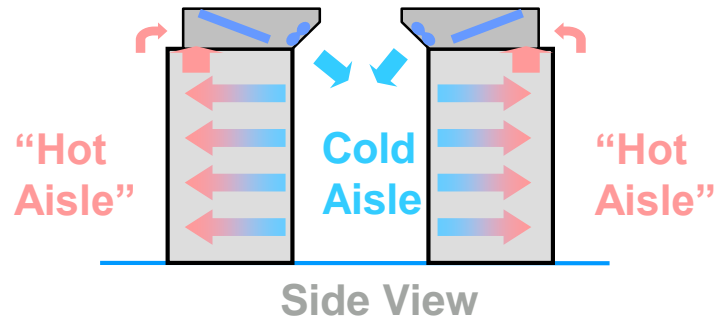
IGBC Platinum

- 15 acre Campus
- 1 million sq.ft floor space
- Data center with 546 racks
- Roof Top Solar
- Rain Water harvesting
- 3300 Work stations

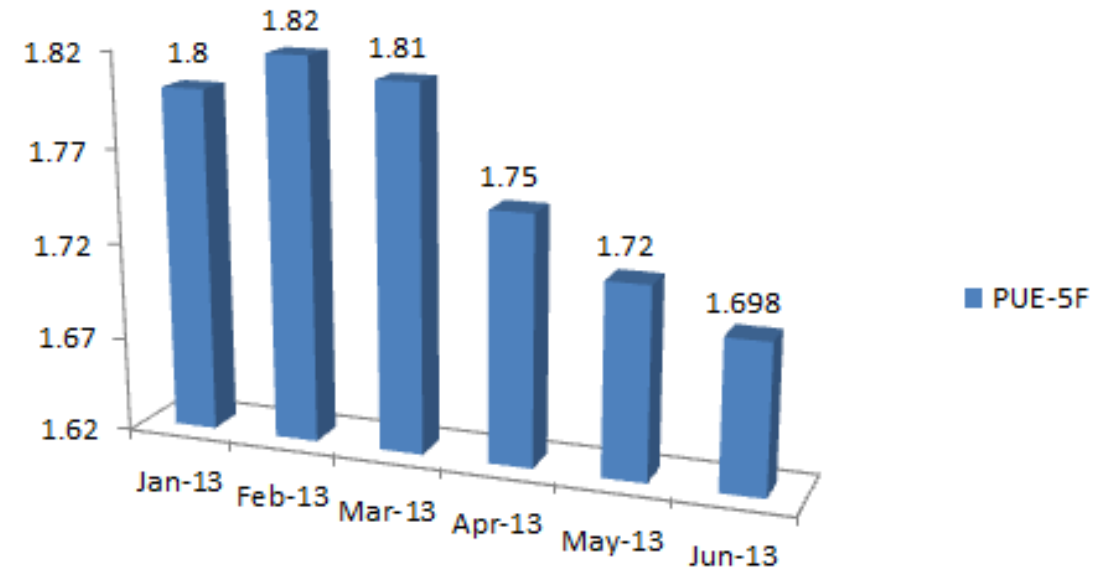
Existing Datacenter-NetApp EGL

Build Year 2013

- Extreme Density In Row Cooling system
- Modular, Scalable UPS system



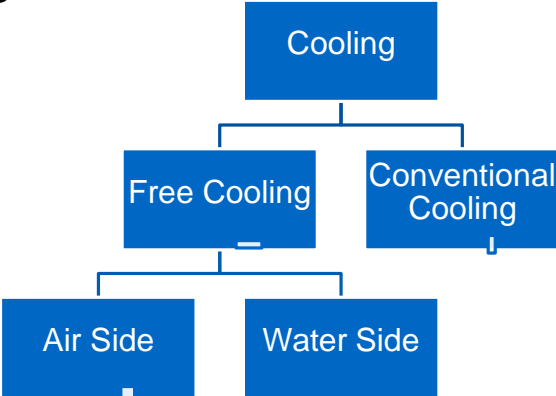
PUE-5F



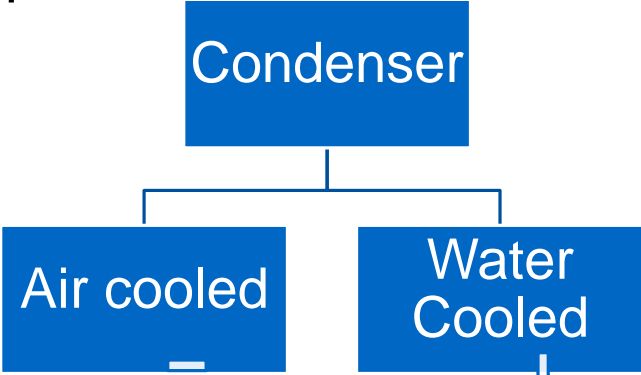
Approaches

To Achieve the Objectives

Design

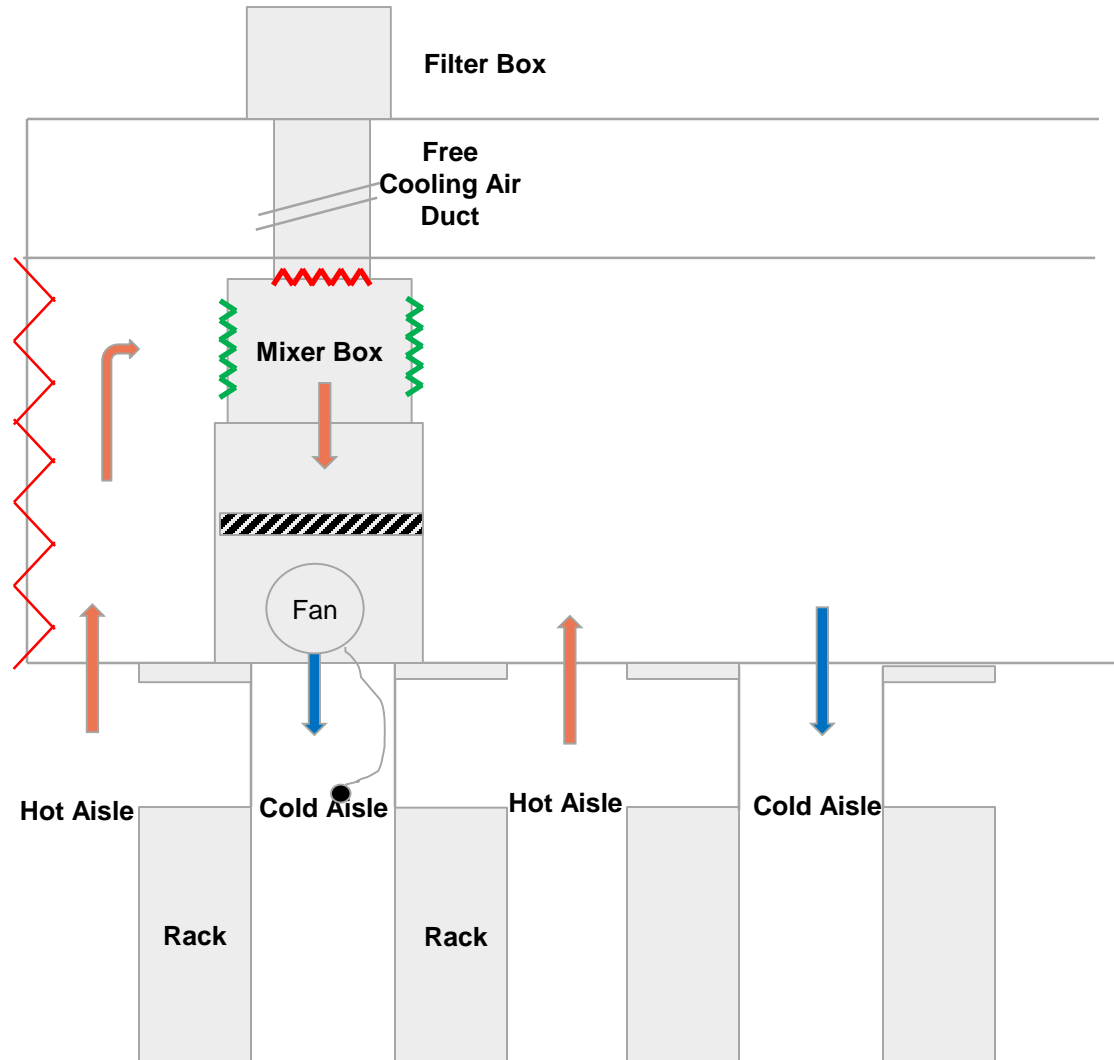


Selection of Equipment



After a lot of deliberations, decided on Water Cooled condenser with Air Side Economizer

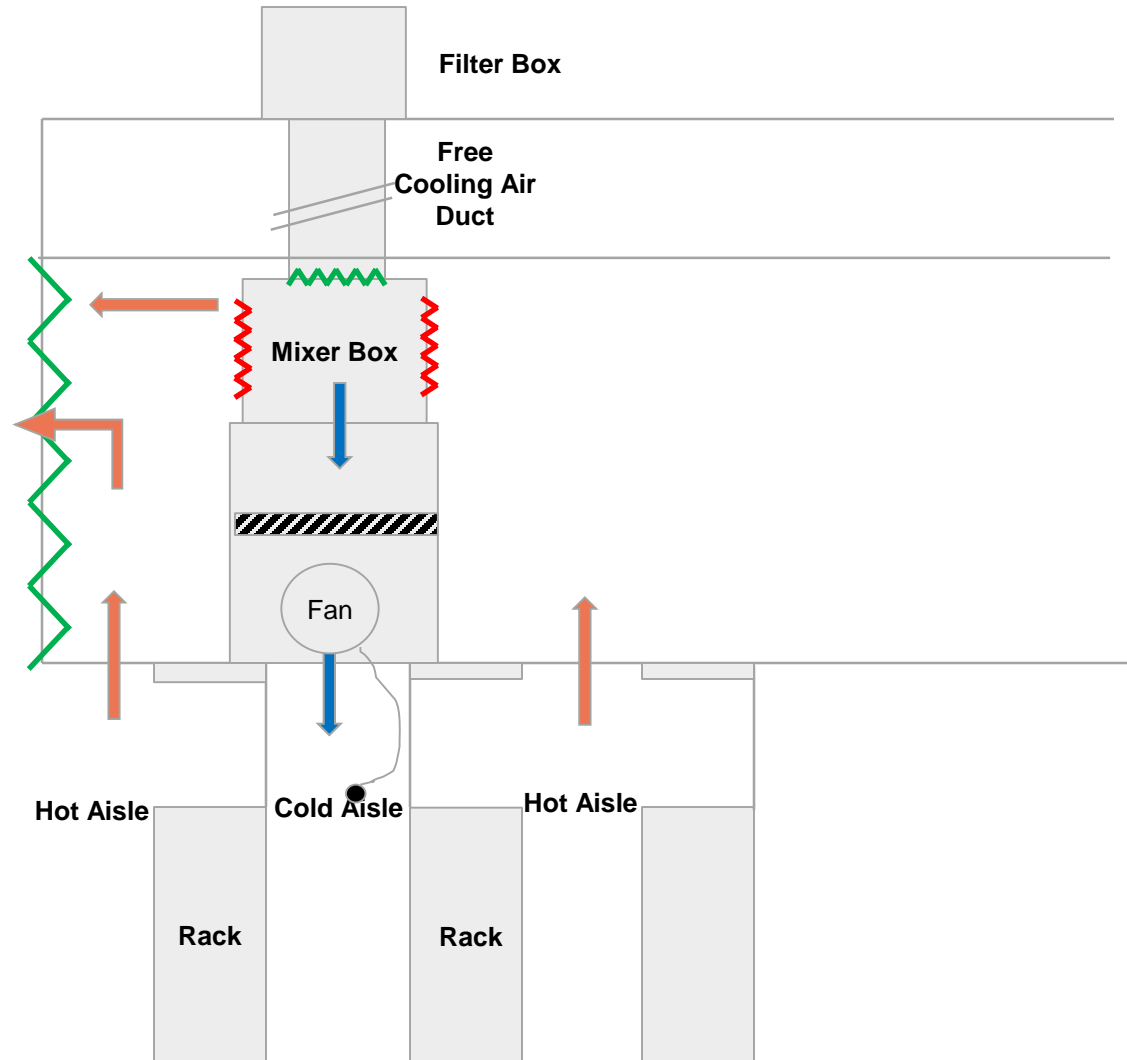
Normal Cooling



- During normal Cooling, cooling is fed by chillers,
- The louvers and Free cooler dampers Are closed as shown.
- The PAC/AHU bypass valve will be closed 100%

~~~~~ Open  
~~~~~ Closed


Free Cooling



- During Free cooling, fresh air from roof fop will enter cold aisle directly after Filtration.
- The louvers will be opened to pump out air from Hot Aisle.
- The PAC/AHU bypass valve will be opened 100% to Shutoff the chillers

~~~~~ Open  
~~~~~ Closed

Results

PUE Comparison

| 2013 | PUE |
|-------------|------------|
| Jan | 1.80 |
| Feb | 1.82 |
| mar | 1.81 |
| Apr | 1.75 |
| May | 1.72 |
| Jun | 1.70 |

| 2019 | PUE |
|-------------|------------|
| Jan | 1.24 |
| Feb | 1.26 |
| mar | 1.28 |
| Apr | 1.29 |
| May | 1.29 |
| Jun | 1.24 |

Way Forward

FY 2020

Goal to achieve a PUE of <1.2

Standardize the ASE design for future builds



Thank You