

# Jordan Ahli Bank



Prepared by: Yossi D.  
Solution Architect

## AC – Working Definitions

Supply Air temperature 22c

3.3kw per rack 40kw in Pod.

150cfm/kw

Redundancy N+1

Air flow 1900l/s or 4000CFM based on InRow ACRD602 2<sup>nd</sup> Generation with R410a instead of R407 at The 1<sup>st</sup> generation units.

Working mode offered by APC: all the units will connected together as a group they will backup each other avoiding hot spots and will work on a 50% fan capacity (900l/s) net sensible cooling capacity 41.7kw the power consumption in that case is 3.98 kw/Crac including the condenser.

**For 3 crac  $3.98*3=11.98kw$**

in case of failure of 1 unit the other 2 will operate at 90% providing net sensible cooling capacity of 39.6kw at least (the return air will be about 31.3c not 29.4c as in the tab below) and the cooling capacity will be higher.

## AC – Working Definitions

The power consumption at this case is around 6.06kw/crac including the condenser

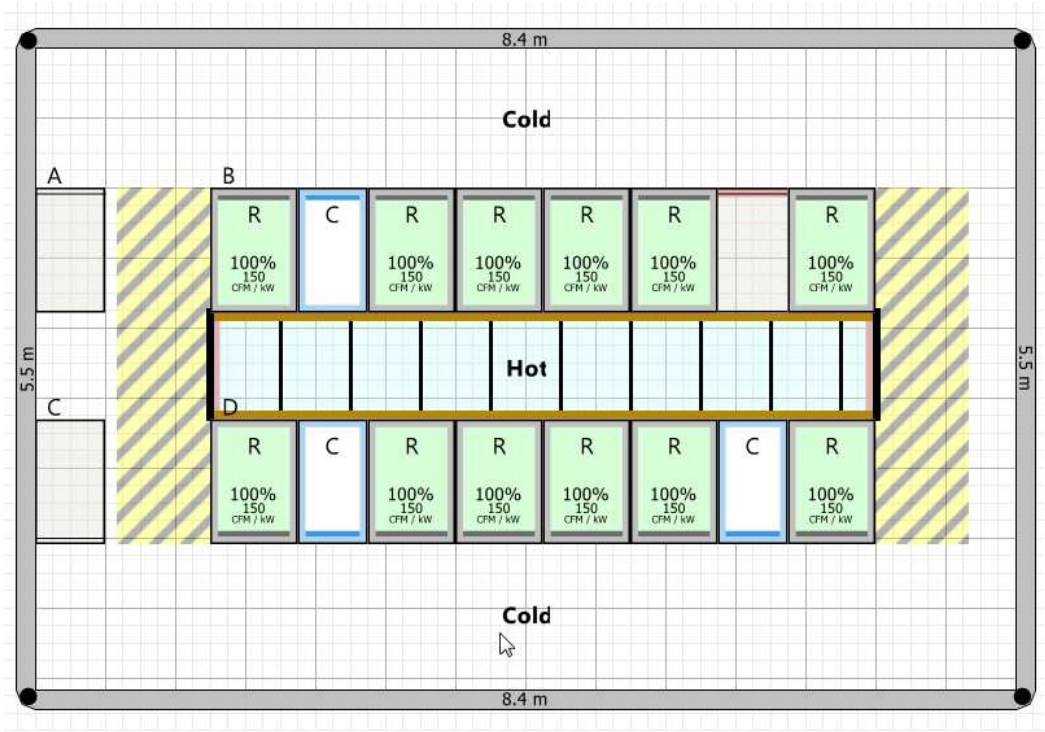
**For 2 crac  $6.06*2=12.02kw$**

**So the conclusion is that it's better to work with 3 units instead of 2 not only from the energy efficiency aspect, as well the redundancy is "hot" and you know that the unit is working in any case of failure and will eliminate a hot spots during the daily operation.**

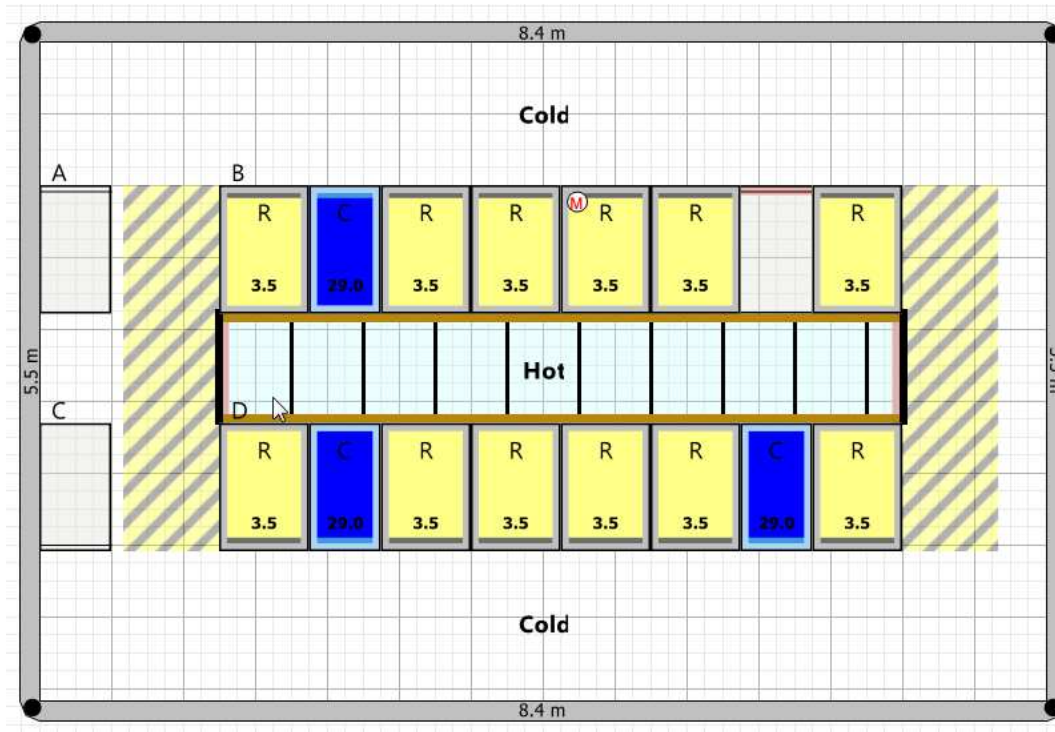
Fan Speed %	L/S (SCFM)	Unit Power in kW	Condenser Fan Power in kW	Net Sensible Capacity kW (BTU/h)	SA Temp °C (°F)
<b>Return Air Temperature—29.4°C (85°F)</b>					
30	600 (1200)	2.89	0.96	11.3 (38,583)	12.9 (55.22)*
40	800 (1600)	2.93	0.98	13.1 (44,729)	15.0 (59.00)*
50	900 (2000)	2.98	1.00	13.9 (47,461)	17.2 (62.96)*
60	1100 (2400)	3.12	1.02	14.5 (49,509)	18.8 (65.84)*
70	1300 (2800)	3.86	1.05	17.1 (58,387)	18.7 (65.66)
80	1500 (3200)	4.11	1.05	17.4 (59,411)	19.9 (67.82)
90	1700 (3600)	5.01	1.05	19.72 (67,332)	19.8 (67.64)
100	1900 (4000)	5.78	1.05	19.9 (67,947)	20.8 (69.44)

# Design Portal

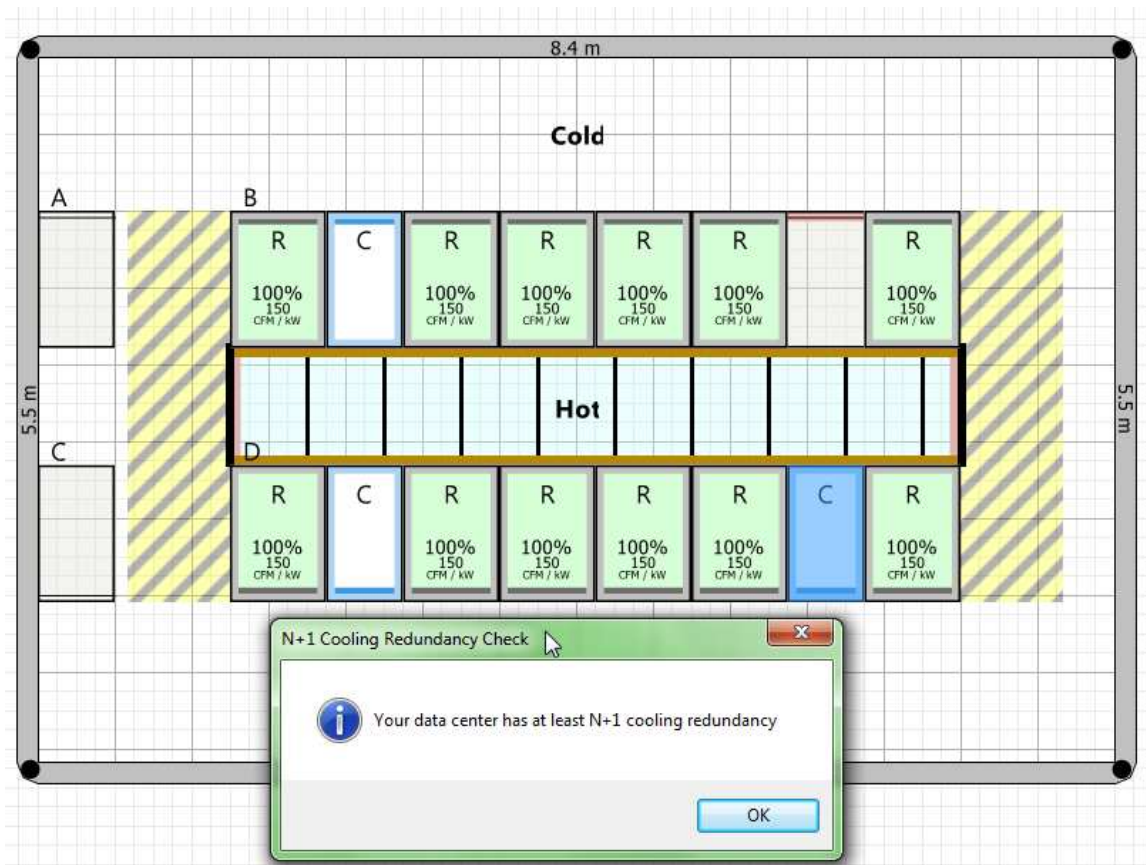
# Lay out including cfm/kw (150)



Heat density 3.5kw in total 42kw



# Redundancy approved with only 3 units



## Calculation

Our ACRD602P unit providing 1900l/s and in a condition of 29.4c air return a  
Sensible cooling of 29.72kw and a net sensible cooling of 19.9kw.

The max net sensible cooling capacity of this unit is up to 42kw in 40.6c air return.

We suggest to use only 3 units instead of 4 to provide the solution.

Our condensers can provide the capacity even in extreme temperature of 40c.



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