

Things You Need to Operate a Successful Data Center Infrastructure.

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If you have spent more than 3 months in data center operations someone has asked, "What is your Watts per Square Foot (W/sq.ft) Data Center design"?

Odds are your room design is somewhere between 40 watts per sqft and 100 watts per sqft. This value is most likely the room envelope, Wall to Wall area including staging, telecom, tape storage, PDU,s (Power Distribution Units) and CRAC units (Computer Room Air Conditioner) See diagram below. Although this is the correct answer from the architect's perspective and the electrical, mechanical capacity construction designs, it causes great confusion in the industry. What we really want to describe and reference is the area or space the work is being performed in. In other words where the **POWER** (Heat) is delivered, and **COOLING**, (heat removal), is required.

To better understand this concept and use this knowledge to communicate with others, please review the drawing below. This is an example of the possible interpretations of Watts per Square Foot data center design. Note as you are going through the exercise that I started out with a 50w/sqft room and by re-evaluating my environment I created a room design at 130w/sqft without spending a dime! The point is **Do Not be Confused by The Facts** you may have a 50w/sqft room but you can produce 130w/sqft of capacity
bq.

Data Center Math

Watts Per Square Foot Of What?

- **Room Envelope** = Gross Raised Floor sqft. This is the wall to wall space of the entire room including ramps, tape storage, PDU,s CRAC's staging area
- **Production Area**= Servers Plus Support Equipment (**Traditional Layout**) This area is represented in blue and is the actual recommended space access (48in front 36in rear) **PLUS** the direct support equipment CRAC's that need to be near the heat loads
- **Equipment Footprint** or Work Cell = Racks + Required Access Space (~16sq.ft. per rack) this is the recommended space for access (48in front 36in rear) and average rack size (24x40in)*
- **Server Rack Load** The actual electrical load of the installed server base in Kw (kilo watts)

Watts Per Square Foot of What?

