

Re: Airflow direction in rack-mount cases

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On Tue, 24 Jun 2008 09:48:23 -0700, John Larkin
<jjlarkin@xx> wrote:

On Tue, 24 Jun 2008 11:02:25 -0500, Allan Herriman
<allanherrmian@xxxxxxxx> wrote:

Hi, I'm aware of some standards that dictate airflow direction in rack mount cases (e.g. ETSI 300 119 and NEBS), and it's usually front to back, bottom to top, or (least preferred) left to right.

But recently I noticed some equipment from Brocade in a 1U case that drew air in at the back, and blew it out the front. This is actually mentioned in the datasheet, so it was not an assembly error (with the fans in the wrong way around).

It's called a "hand warmer."

Why would designers go against the standards and do this? Could there be some benefit to the equipment?

Standards are for sheep. If a rack is internally plenum-fed with cool (and sometimes super-temperature-controlled) air, it makes sense to intake from inside the rack and dump the warm air into the room. We do a bunch of electro-optical stuff that way, with the most temp-critical stuff in the back of the box. The fan's in front, so its own heat heads straight out.

Left-right will just spin hot air inside a rack. And probably restrict flow badly. Ditto bottom-top.

Small benchtop instruments usually blow out the back, so as not to annoy users with the air and noise. Whatever works best.

John

Thinking a bit, bottom to top is helped by convection flows. Front panel versus back panel requires consideration of who and why some is at the front panel or back panel. The front panel is usually for meter readers and such who are very intolerant of warm air in their faces, back panels are usually full of connectors and such and represent a restricted flow. Sideways flows in racks are useful only in carefully managed situations. In all cases consider various users and maintainers and total heat transport.