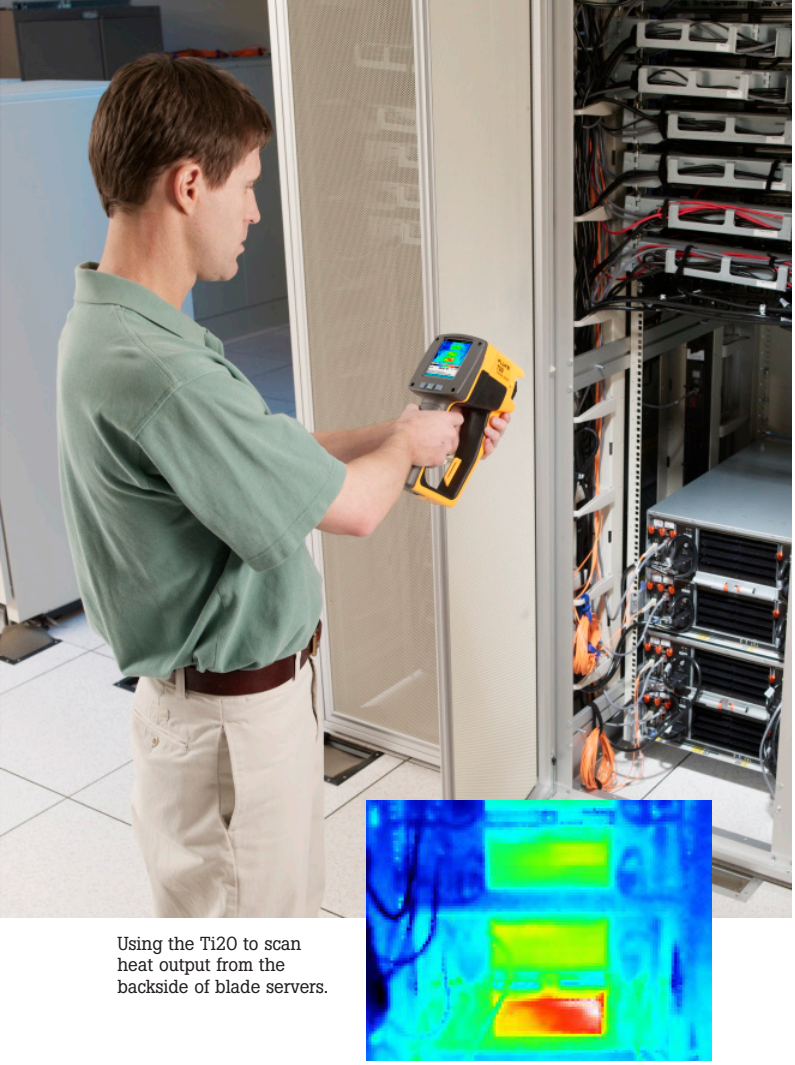

Using the Ti20 to scan heat output from the backside of blade servers.

The Fluke Ti20 Thermal Imager makes two-dimensional representations of the surface temperatures of objects in an infrared image. The support analyst uses the Ti20 to monitor data centers for general cooling efficiency and to inspect law firm's servers in those centers. Software that comes with the imager allows him to change key parameters, optimize images, and extract maximum details from collected data.

Problems and solutions

As the law firm seeks to expand its data handling capabilities, the biggest problem the support analyst faces is that data centers lack the required power and cooling capabilities to support new technologies.

"We want to take advantage of the latest blade servers, but it's difficult to find data centers that can support them," he says. "Blade servers are much more efficient [than traditional servers]. We can pack six or seven virtual servers onto a single blade. An enclosure or rack holds eight blades, but each full enclosure requires a lot of power. Many data centers simply can't supply that power. They want us to use an older technology so they can support our needs."

Blade servers also produce considerable heat and require more cooling than many centers can supply. In such cases, the analyst uses the Fluke Ti20 and Fluke 975 to 1) map cooling patterns in data centers, 2) find faulty cooling arrangements and 3) determine when cooling, air flow and air temperatures are inadequate to guard against breaches of server warranties.

Mapping cooling patterns allows company personnel to see the overall effects of cooling within a data center. This may seem like a duplication of effort, since data centers themselves monitor the environmentals—power, air, humidity, cooling, etc. However, "our primary use for these tools is to check what we are told by the data centers," the analyst says. "Then, if necessary, we can suggest corrective measures to keep our servers functioning efficiently."

The support analyst cites the local data center as an example: "The way the room is set up right now greatly restricts the air flow going to some of the devices positioned across the room from the air-conditioning unit. Using the Ti20, we were able to take temperature readings of surfaces in each area of the room. Then, using those readings, we were able to plot out where the cool air travels. We found that while one area of the room is cold, as we worked our way around the room, areas were gradually warmer and warmer."

He says that the Fluke 975 AirMeter used in conjunction with the Ti20 allowed for a more in-depth analysis of the local data center: "Temperature and humidity readings indicated that the hot air that should be exhausted from the room is actually being dumped back into the room in an endless cycle. The air-conditioner cools itself down and shuts off. But the circulation fans keep working. They actually kick the hot air back into the room. Overall, it's a very poorly designed room. We're looking to the data center to restructure the cooling system."

Finding faulty cooling arrangements for the law firm's servers is another of the analyst's uses for the Ti20. "Because of the cooling requirements for blade servers, we have been using the Ti20 to monitor the temperatures of the air flowing into the fronts and out the backs of our blade racks," he says.

A common problem experienced by their blade servers is hot air entering the front of the blades. Only cooling air should be entering the rack fronts. Two situations that lead to this problem are 1) missing blanks on empty rack slots and 2) server aisles set up with servers arranged front to back.