<HTML GRAPHIC>
Dotcom-Monitor – “Keep an eye on your site”
2950 Xenium Lane N, Suite 104
Plymouth, MN 55441
info@dotcom-monitor.com
Phone: 1-888-479-0741
www.dotcom-monitor.com

August 20, 2003

Solving the Server Temperature Monitoring Problem in Real-time

By Brad Canham

Problem: Problems occur when your servers heat up. Circuit boards fail, data gets lost, customers see “Error” pages, employee productivity falls, and profits disappear.

Solution: But how do you monitor your server temperatures without wasting time, sitting in a room full of servers? A new strategic alliance between Sensatronics (www.sensatronics.com), makers of TempTrax; and Dotcom-Monitor ™ (www.dotcom-monitor.com), an online monitoring service, enables you to monitor server temperature remotely in real-time, letting you know immediately when things start to heat up.

Result: Decreased server downtime, happier customers, and you and your staff are free to concentrate on more profitable tasks.

The strategic alliance of the TempTrax –(hardware temperature monitoring solution) and Dotcom-Monitor –(web site and network monitoring and alerting service) provides a seamless method of insuring maximum uptime for web applications, network servers, routers and other server room equipment..

Uptime is job one

Overheated web servers result in website downtime…a situation with which online customers have little patience. (1) If your job is to keep your servers and Internet environment up and running 24/7, to keep IT department costs down, and to keep profits up, you can’t do any of the above if your equipment fails.

With changes in the environmental and hardware of server rooms and data centers, the need for temperature monitoring becomes more and more critical. As businesses grow and data centers change the intricacies of managing server room heat load and monitoring “hot spots” becomes more critical. In fact, the ability to remotely and continuously monitor temperatures in server rooms and data centers is part of a clear IT infrastructure defensive strategy.

Real-time server temperature monitoring and alerts

This brief white paper explores how packaging a server temperature monitoring solution with an external monitoring service helps to protect your investment in servers and decrease both server and internet downtime. Take proactive steps to protect your servers, data, employee productivity and customer relations.

TempTrax is part of a family of electronic temperature measuring devices. TempTrax can measure the temperature in your refrigeration units, notify you if the temperature in your server room gets too hot, or simply provide temperature logging for test purposes.

Dotcom-Monitor.com is a leading provider of external web site and network monitoring services. They provide external monitoring of web applications, Mail, DNS, FTP, Telnet Servers, Routers, Firewalls and TempTrax devices.

Dotcom-Monitor interfaces with TempTrax at time intervals that you specify (i.e., once per hour, once a minute) and keeps a running record of temperature data. If the information collected by Dotcom-Monitor indicates temperatures have crossed a preset threshold, an automated alert will be sent to you via the method(s) you specify – pager, phone, e-mail or any other wireless device.

Minimizing Server Problems with Defensive Strategies: Proactive Monitoring

At many businesses, the rooms that house servers are locked for security purposes and are particularly dependent on the heating, ventilation and air conditioning (HVAC) systems that manage them.

According to a recent report, “Ventilation should be adequate (if the room is comfortable for people then ventilation is probably adequate for the server) and the temperature should be kept well within the operating specifications of the server. Temperatures below 50 degree Fahrenheit (10 Celsius) or above 82 degrees Fahrenheit (28 Celsius) lead to unreliability and expensive damage.” (2)

In tightly insulated server rooms (i.e., in server rooms using Halon gas fire-suppressant systems for computer electronics, the server rooms are tightly insulated to insure that the Halon gas does not escape when used to “suffocate” a fire.) the temperature conditions can change quickly making these rooms especially susceptible to human error, such as the following: doors that should’ve been left open and are closed by cleaning crews, air-conditioning failures,

temperature settings are changed from season to season or from day to night temperatures, or installation of a newer server with greater heat output.

And in many cases, the causes of server downtime are human error, such as: doors that should have been left open and are closed by cleaning crews, air-conditioning failures, temperature settings are changed from season to season or from day to night temperatures, or installation of a newer server with a greater heat output.

With that in mind, server room and data center heat loads are actually often set up on a much narrower temperature range in order to insure processor longevity and reliability. “(Data Centers) are essentially building shells packed with computers, power supplies, power conditioning equipment, control electronics, and backup power systems along with air conditioning systems to keep the equipment cooled to optimum operating temperatures, generally 68-70 degrees Fahrenheit.” (3)

In this case, establishing and maintaining optimum server room temperature over the long term becomes almost impossible without ongoing remote temperature monitoring.

Case Study: Telecommunications Company, Intermittent Server Problems

Situation: A telecommunication company in the Midwest uses word processing, mail-merging and databases, and maintains a very active web presence in the form of a corporate web site and new online shopping cart system. The workstations are networked IBM compatible PC machines with CD drives, a floppy disk drive, and hard drive. They also extensively use the network drives to share data. All software and data is stored on two company fileservers.

Problem: In early April, the IT administrator replaces two fileservers with two newer machines and an additional web server is added to the server room to handle increased web traffic. The increased web traffic is the result of a new online shopping cart being added to the company web site. Later in April, the web server fails, the new web shopping system crashes for three days, and there are disk errors. Unfortunately, the failures continue intermittently for the next few months despite several component replacements including the disk drive, power supply and motherboard.
Initially the problem is thought to be related to the local power supply and the two new fileservers, which are demanding and sensitive to current fluctuations.

Solution: However, in July after the company CIO installs a temperature monitoring system it becomes clear that a “hot spot” occurs in the evening in the server room. The CIO discovers an interesting temperature issue after he sets up the monitoring parameters: the new web server is running warmer during the evenings. With further investigation she discovers this is due to the web server

taking on additional web traffic from the West Coast during those hours and the air conditioning in an adjoining room to the server room is turned down in the evenings. This results in an unexpected decrease in air flow and increased temperature in the server room -- enough to cause intermittent server problems.

Result: The process of successive failure and repair over those several months results in several incidents of complete loss of access to data, lost customer interactions on the web site, and web server downtime for several days at a time. This is particularly serious when customers are deciding if they are going to trust the telecommunication company's new online shopping cart system.

The Costs of Server Downtime and Problem Misdiagnosis

In each case, the intermittent failure of the web server had considerable costs to employee's productivity and customer relations. In this case, the IT administrator had a cautious approach and a fairly defensive strategy to maintaining a secure server room. However, there was permanent loss of data, considerable anxiety and frustration by the IT administrator, the sales team, and online shopping cart team, a negative impact on customer relations and many working hours were effectively lost. It was only after the CIO stepped in with the temperature monitoring system that the problem was solved.

In this case, the cost of incidents, in terms of lost working hours alone, is estimated at over $16,000. The full cost is probably much higher. These are the type of circumstances that can lead from server failures to public relation nightmares due to crashed web applications.

Conclusion: Proactive Server Monitoring

TempTrax monitors the temperature of servers and Dotcom-Monitor has an "outside looking in" window on monitoring the server temperature information.

By aligning the two systems you can set up Dotcom-Monitor to send an alert to your pager, phone, e-mail, or wireless device when the temperature recorded by TempTrax moves outside of the parameters you've establish. The alert that you receive will include information about the temperature.

By setting up a proactive monitoring system you can insure that your on-call network administrator can quickly respond directly or via a notification tree (this can also be set up on Dotcom-Monitor) to the server issue or divert the data traffic to a new server

Finally, a record of temperatures is kept on your web interface to Dotcom-Monitor in the form of raw data as well as full-color graphs. This type of information allows for a proactive approach to managing the heat load in your server room.

A proactive approach to temperature monitoring in server rooms and data centers is a critical aspect of an ongoing defensive strategy to maintain IT infrastructure health. The strategic alliance of TempTrax and Dotcom-Monitor automates the monitoring process such that IT engineers are freed to focus on other more profitable tasks.

(1) White Paper: Changing Cooling Requirements leave many Data Centers at risk: As uptime expectations continue to grow and new computer technology replaces mainframe chilled water with air-side cooling, the performance demand on data center HVAC systems is rapidly increasing. By W. Pitt Turner IV, PE and Edward C. Koplin, PE, 2000 Computersite Engineering, Inc. http://www.upsite.com/TUIpages/whitepapers/tuicooling.html

(2) Research Report: Renewal Energy Policy Project, “Energy Smart Data Systems: Applying Energy Efficient Design and Technology to the Digital Information Sector, by Fred Beck, November 2001, http://solstice.crest.org/articles/static/1/binaries/data_centers_report.pdf)

(2) The Australian National University, Information Technology Services & Planning Unit, “Defensive Computing Strategies for Desktop Computers and Local Area Networks, 6 February 1995, (amended 15 February 2000) http://its.anu.edu.au/policies/its3.html)