

WHEN INTERNET TIME CAN BE BAD FOR YOUR HEALTH

Once upon a time there was a large health service provider that relied on free time servers via the Internet to synchronize its internal servers. Everything was running just fine until one of the Internet time servers the hospital was “pinging” to get its time shut down. What happened then was a large group of the hospital’s servers and desktops defaulted to pingging a single time server via one root server and that is when the trouble started.

You see, to this external, Internet-based time server, traffic coming from many devices at one company looks like it’s all coming from one source. In reaction to this, the owners of the external time server “spoofed” the hospital and set their system to always transmit a time five years in the past, to December 31, 1999.

In the owner’s opinion, the organization did not act maliciously — it just knew that a specific source, which could not be identified, was pingging their time server an unreasonable number of times per day. When the health service provider’s IT staff came to work they started receiving support calls that some of the servers displayed times significantly off from the correct time.

“We determined that 29 of our 165 servers registered the wrong time,” said David Devlin, Senior Systems Administrator for Capital Health, which provides core health services to 395,000 residents, or 40-percent of the population of Nova Scotia. It took close to three hours to discover the affected servers and correct the problem. “I didn’t get to many meetings that day,” said Devlin.

The problem originally began at about 4 a.m. By the time Capital Health discovered the situation at 9 a.m. and fixed it, nearly eight hours had elapsed. Patient-care data entered during this period on those 29 servers appeared incorrectly on reports. “With the time set-back by five years, the system immediately archived some of the files,” Devlin explained. “We did not lose files, but the data for that time period became invalid, and many historical trace logs were lost. The tools we use to look at them simply do not see the time. We were lucky. If the time had been set back only three or four days, it would have been far worse — we could not have easily identified good data from bad data.

“We basically lost faith in the various organizations that deliver free time over the Internet. We don’t know the people who manage the servers on the other end. What if they have a disgruntled employee or someone who wants to play a joke? Precise time is outside of our control on the Internet.”

Devlin searched for a network appliance that would give control back to Capital Health. His research on the Internet and information gleaned from product manuals led to the clear conclusion that Symmetricom offered the best solution. “We also looked at two other products, including one that cost less,” Devlin said. “But we chose Symmetricom’s NTS-200 network time server because of its GUI (graphical user interface), precision capabilities, and failover features.”

The [NTS-200](#) synchronizes clocks on servers and workstations across networks by combining a high-speed/high-capacity network interface, versatile GPS timing-receiver-technology, a web-enabled user interface, and a wide range of network protocol support. The GUI interface allows Capital Health to easily manage and check on the NTS-200 when necessary, but the appliance has functioned so well that Capital Health simply set it up and has since left it alone.

“Anyone can come up to speed on it immediately,” Devlin said. But perhaps the feature that sold Capital Health most on the NTS-200 was its ability to failover to Internet time should the need arise. “If the antenna goes down due to a storm, we don’t want long holdover times,” Devlin said. “We prefer to temporarily failover to Internet time from multiple time servers that we have negotiated an agreement with to provide failover time, rather than rely on the oscillator that many Symmetricom competitors require.” Devlin found that other solutions did not offer this feature, referred to as peering. Capital Health installed the NTS-200 without any assistance from Symmetricom. Within minutes the appliance detected several GPS satellites and synchronized the time on Capital Health’s servers, routers and other network devices. When Devlin purposefully forced the antenna connection to fail, the system properly switched over to Internet time sources. Approximately 200 Capital Health devices, including servers, routers and switches, now

point directly to the NTS-200. The time on all the devices has remained precise since the installation, and Capital Health's team has not had to spend any time monitoring the NTS-200 since initially watching over the system during the first week.

Once Capital Health's IT department demonstrated the success of the new time server, other departments in charge of their own servers asked to also point their servers to the NTS-200 for time synchronization. "With the time-problem event that occurred and the features demonstrated by the NTS-200, all of our departments now understand the value of accurate and precise time," Devlin said. "They also appreciate the ability of having control over precise time from within the company."

The [NTS-200](#) has proven to work effortlessly with all of Capital Health's server operating systems — Novell, Microsoft and UNIX. The appliance also synchronizes Capital Health's operating room clocks, paging systems, and telecommunication switches.

The NTS-200 here referred to, is now long gone.

Today in 2016, several equipment generations later, the S600 and the S650 is top of the range.

These new NTP servers exceeds the capability of the NTS-200 big time.

In addition, the security level of the new servers are in a whole new division representing State of the Art with regards to resistance against virtually any danger seen of the internet today.