



# Southern Minnesota Section Newsletter

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## **Mister House**

MisterHouse is an open-source home automation program. It's fun, it's free, and it's entirely geeky. Written in Perl, it fires events based on time, web, socket, voice, and serial data. It currently runs on Windows 95/98/NT/2k/XP and on most Unix platforms, including Linux.

Some of the features of MisterHouse include monitoring internet traffic, announcing vehicle location using ham packet radio, sending/receiving data from iButton and X10 devices, weather monitoring with local hardware or internet data, announcing the caller ID of incoming phone calls, and tracking calendar and TV listings to announce event or show reminders.

## **The Need for a Storage Access Network Processor**

Storage capacity is growing faster than 80% a year, according to Dataquest. This growth is being fueled by computer-generated simulation, digital representations, increased communications, and enterprise databases. The traditional Direct Attached Storage (DAS) model is being replaced with the Storage Attached Network (SAN) model to reduce the cost of management, get better storage utilization, improve reliability, and improve performance. The most common SAN approach is to use the Fibre Channel (FC) protocol, which was originally developed for point-to-point storage access. However, the adaptation of this technology for use as a SAN solution has resulted in a complex solution which still has some interoperability, scaling, security, and distance-limitation issues.

To overcome many of the FC SAN limitations, many IT organizations are interested in a TCP/IP SAN model. It turns out that there are two areas that need to be addressed: 1) a standard interface is needed so that legacy applications and storage can continue to use the SCSI APIs, but over a TCP/IP stack; and 2) current TCP/IP implementations need to consume less host computing resources. An IETF working group is developing the iSCSI standards to address the first issue, and a new breed of processor is required to address the latter issue.

An approach which can process an entire SCSI task within a "zero-copy" memory architecture is required. General Purpose Processors cannot process these protocols fast enough, mainly due to their memory management schemes, context switching overhead, and lack of special function units that are necessary in these applications. Network Processor Units (NPUs) are also inadequate for this task as they process packets without connection context. What is needed is a Storage Network Access Processor (SNAP) which can fully terminate the relevant protocols, and process packets as well as PDUs in a very effective manner. Key requirements for a SNAP are: protocol processing offload, flexibility to adapt to protocol changes and to tune for application awareness, and scaling to achieve high throughput and large numbers of TCP connections.

*Continued on reverse*

## **IEEE Section Meeting**

**Bruce Winter**

### **Home Automation**

Monday, May 20, 6:30 pm  
Mayo Medical Sciences Building  
(321 3rd Avenue SW, Rochester)

☞ Pizza at 6:30; Meeting at 7:00 ☜

*Bruce Winter is a Senior Engineer at IBM Rochester. He started MisterHouse as a hobby a few years ago to help control the temperature in his passive solar, earth bermed home by opening and closing the shades based on sunlight and temperature levels. He will talk about how to start and maintain an open-source project – MisterHouse has over 100 contributors and 500 users worldwide – and he will review some of the hardware available for home automation. MisterHouse can be found on the web at <http://misterhouse.sf.net>.*

## **IEEE Communications and Signal Processing Chapter Meeting**

**John Shaffer, Silverback Systems**

### **Need for a Storage Access Network Processor**

Monday, June 3, 6:30 pm  
Mayo Medical Sciences Building  
(321 3rd Avenue SW, Rochester)

☞ Pizza at 6:30; Meeting at 7:00 ☜

*John Shaffer has been a member of IEEE since 1985 and a member of the ACM and the Communications SIG since 1989. He is presently employed as a Lead Architect at Silverback Systems, a well-funded startup formed in August 2000.*

*Prior to Silverback he was employed by IBM for 5 years in network processor architecture. He also spent several years at Unisys Corporation as a communications systems engineer.*

*John has a BS in mathematics and an MS in electrical engineering, both from the University of Delaware, and he completed a Ph.D. in computer science at the University of Pennsylvania in 1996.*

*John holds several patents in the area of communications and network architecture. His chief interests include distributed systems, network systems architecture and high-speed communications.*

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This new breed of Storage Network Access Processor requires technical innovations to address the specific requirements of network storage processing at multi-gigabit speeds. Design requirements include a new memory management mechanism specific to the needs of network storage, the elimination of context switching and interrupts, as well as task partitioning — all of which must support scaling to higher speeds. In summary, protocol processing tasks must be mapped to a new architecture capable of performing iSCSI, TOE, NAS, and other TCP/IP-based acceleration to fit various configuration requirements.



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