

miniSAN is LayerWalker's patented technology designed specifically for home, SOHO and SMB network storage markets. Imagine that you sit before your PC working on your files from a storage box in the living room. Kids are watching home videos in family room from the same box via your home network. Old data is backing up to that very same device from your laptop upstairs as scheduled.. With a **miniSAN**-enabled storage box, all these activities can happen at the same time just like local disk access in each place. No expensive storage servers are needed. No network configuration hassles at all.



In fact, the **miniSAN** technology could offer more on various data and multimedia applications in people's daily digital lives. It could show up as standalone network storage for simple file access, or it could be integrated into most of the modern digital home appliances (gateway, set-top-box, media server/player) that equip some sort of data storage functions. With intelligent System-on-a-Chip architecture and dedicated ASIC hardware designs, the LayerWalker **miniSAN** controllers are positioned to bring excellent performance and versatile features to these home applications at minimal cost. Brief summary of the **miniSAN** advantages:

- **Simple** – With driver software installed, device discovery is almost instant and plug-and-play. No cumbersome and confusing network IP/DHCP/etc settings required.
- **Fast** – Unique protocol engines and hardware datapath produce highest data performance bounded by nothing but interface speed and physical disk's sequential rate.
- **Safe** – Specifically designed management with access control and hardware firewall. Data secure with ATA security, S.M.A.R.T and optional software RAID support.
- **Smart** – Embedded firmware delivers full-stack TCP/IP management plus manufacturing and testing support. Feature adds (like FTP) and code patches are feasible.
- **Low-Cost** – Simple controller architecture requires no external RAM/ROM or hassles of porting embedded OS drivers. Minimal total BOM cost and development efforts.
- **Flexible** – Works perfectly at 10/100Mbps and gigabit Ethernet speeds. Friendly to co-work with other disk masters and all 2.5" and 3.5" ATA and SATA disks.
- **Scalable** – Natural storage space growth with SAN operational structure. Storage expansion is unlimited and never easier.
- **Green** – RoHS-compliant components that generate extremely low power dissipation (<350mW) even under gigabit data access speed.

Technically the **miniSAN** technology adopts an open SAN protocol named ATA-over-Ethernet (AoE). That is, beyond common TCP/IP management facilities, **miniSAN** uses AoE as a thin layer to process ATA commands directly over Ethernet traffic. With AoE, **miniSAN** bypasses a majority of the time-consuming network protocols in disk access and shifts associated file-system tasks to host side. On top of that, LayerWalker invented several proprietary acceleration techniques to further speed up AoE data traffic. The resulting **miniSAN** design has proven its ability to offer 3x-5x performance over fastest home NAS SoC implementations, yet with just a fractional cost required.

miniSAN and its build-in AoE engine deliver a simple, fast and cheap alternative to those commonly used SAN components like in iSCSI and FiberChannel systems. LayerWalker now ships **miniSAN** controllers with host-side drivers for Linux 2.4/2.6 and Windows 2000/NT/XP/2003/Vista OS. However, thanks to the open spec and community efforts, customers could find public or 3rd-party support on other platforms (Mac/Solaris/FreeBSD) as well. AoE is actually native in Linux 2.6.11 and beyond. And depending on the host platform and the needed applications, various file systems and disk/volume managers could be chosen freely and flexibly. More information of AoE could be found at http://en.wikipedia.org/wiki/ATA_over_Ethernet.

