

# Why I Dumped My SAN (in favor of the Intel® Modular Server)

By Bob Williamson, Network Administrator, Eisenhower & Carlson, PLLC



**Eisenhower & Carlson, PLLC**  
is a midsize law firm with offices  
in Seattle and Tacoma,  
Washington

It was a nice, 70-degree Sunday afternoon. I was taking it easy, doing nothing in particular. My phone rang; it was work. My heart sank, and I hoped against hope that it would be a simple question about something trivial, like a broken mouse.

I am the sole IT staff person for Eisenhower & Carlson, PLLC, a midsize law firm with offices in Seattle and Tacoma, Washington. At the time of the phone call, we had three VSphere\* servers with 15 guest servers linked to a network switch and an iSCSI SAN (storage area network) via a nest of cables.

## Server-Room Meltdown

The attorney at the other end of the line reported that none of the servers seemed to be functioning. He had a rush job and was anxious about the network standstill. I hastily logged in remotely and noticed that things were indeed not well. The SAN had shut down four hard drives; two of these drives were in the same RAID 5 group. Having no idea what was going on, I rushed into the office to check it out.

Our office is in a Tacoma high rise, and as soon as the elevator doors opened, I realized that there was a major issue with the heating system. Sweat dripping down my face, I opened the server room door, only to be hit by a second blast of hot air worse than the first.

The building air conditioning had shut down as part of a seasonal heating and cooling system cycle change. The SAN ran hot anyway, so a change in the passive cooling tipped it over the edge and caused it to fail.

## Solution: Replace the SAN with Intel® Modular Server

“Why not expand my Intel® Modular Server and get rid of the SAN altogether?”

– Bob Williamson,  
Network Administrator,  
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I immediately shut down all of the servers and the SAN, most simply by holding down the power buttons and/or unplugging them. I ran around looking for any fans I could find and began setting them up in an attempt to get the hottest air out of the server room. It was then that I decided to call the managing partner and let him know that the systems might not be available for business Monday morning and possibly longer. After what seemed like hours, I was able to get nearly everything running again, but I had lost an important virtual server and the remainder of my weekend.

Throughout this entire situation the Intel® Modular Server, the system that managed the network and our clients' information, just kept running- unaffected by the heat.

### Solution: Replace the SAN with Intel® Modular Server

After this incident, the reliability of our SAN was suspect. Any time a computer system overheats, its reliability—especially that of the hard drives—is thereafter unknown. Plus, our SAN was almost out of warranty, so we would soon lose support.

I explained to my management that we should replace the SAN as soon as possible, then proceeded to evaluate options, compare features, and procure quotes. However, the prices that came in shocked everyone, including me. Management coughed, choked, and complained.

So I came up with an alternative. Why not expand my existing Intel Modular Server and get rid of the SAN altogether? The Intel Modular Server is an integrated solution for businesses of our size that combines computing, storage, and networking in a single chassis. We had installed only two (of six possible) Intel® Server Compute Modules in our Intel Modular Server, and these Server Compute Modules ran VM-ware ESX and hosted a number of virtual machines already. Given the dual Intel® Xeon® processor based compute modules were more powerful than the rack servers

I was currently running for the SAN, simply expanding the memory in my Modular Server would allow me to retire the rack mount servers without purchasing any additional compute modules.

I priced the cost of adding more RAM, a second Storage Control Module for redundancy, and ten additional 300-giga-byte SAS drives (for a total of 14 drives) to the Intel Modular Server to duplicate SAN functionality, and found the price differential to be shocking: \$1,800 to add storage to the SAN on our Intel Modular Server, versus \$15,000 to \$30,000 for a new standalone SAN.

### Less Money, Complication, and Heat

The decision was a no-brainer for management and me. In addition to saving the firm thousands of dollars, expanding our Intel Modular Server would give us a less complicated IT infrastructure. Because we were able to consolidate servers, switches, and storage into one chassis, we were able to eliminate the tangle of cables and switches that criss-crossed our server room connecting servers with the SAN.

We also ended up with higher levels of network reliability thanks to a number of Intel Modular Server features:

- Up to six Intel Server Compute Modules with dual multi-core Intel® Xeon® processors
- Up to four network interface cards for each Server Compute Module with direct connections to the internal switches (no cables!)
- Two 10-port switches (with direct connects to the compute modules)
- Three power supplies
- Two Storage Control Modules
- Up to 14 hard drives



## Intel® Modular Server: Business-in-a-Box Server

The Intel® Modular Server built on Intel® Multi-Flex Technology integrates storage, computing, and networking to simplify complex IT environments for small and midsize businesses. It supports up to six Intel® Server Compute Modules, two hard disk drive options, two Ethernet Switch Modules, an integrated SAN, and a Management Module.

### It gets even better:

- The 14 drives can be separated into pools and virtual disks of any size
- The Intel Modular Server offers RAID 0, 1, 1e, 5 and 6
- Server Compute Modules can be set to automatically fail over among themselves
- The switches include VLAN for separating traffic
- You can remotely manage the Server Compute Modules using a built-in Java based KVM\*. (This enables me to power them down completely, reboot them, modify the BIOS settings, and interact with every aspect of the network from any location with an Internet connection)
- Use shared LUNs at direct-access speeds

However, the feature of the Intel Modular Server most instrumental in enabling Eisenhower & Carlson to get rid of its SAN is the ability of the storage system to share virtual disks among multiple compute modules simultaneously (as is possible with an iSCSI/fiber channel SAN). This capability, called the Intel® Shared LUN feature, enabled me to take advantage of the VMware\* clustered file system

and VMotion\*, high availability, and other virtualization features, among the compute modules when they are running ESX/VSphere.

I purchased the needed Intel Modular Server hardware, plugged an external CD into one of the Server Compute Modules, and went home. From there, I connected remotely to the firm's network, logged on to the Intel Modular Server management console, and booted the compute modules. Because the KVM works when the compute module is off, I hopped in and checked the BIOS settings. I loaded VSphere and pointed it to our failing SAN and the local Intel Modular Server storage system. I used the VMware VMotion feature to move the virtual machines over to the Intel Modular Server storage system without interrupting any users. When that process was complete, I shut down the old SAN, and have not looked back.

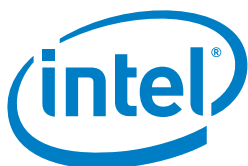
**Management is happy. I am happy.  
My users are happy.**

**Anyone wanna buy a slightly used SAN?**

For more information on Intel® Modular Server, visit:  
[www.intel.com/go/mft](http://www.intel.com/go/mft)

For more information on Intel® Server Products, visit:  
[www.intel.com/go/serverproducts](http://www.intel.com/go/serverproducts)

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