



SuperSwitch™
Frequently Asked Questions

Q: What is SuperSwitch™?

A: SuperSwitch™ enables host-to-host communication over the PCIe bus at speeds of 20Gb/s. It provides three different options:

- SuperSwitch™ 1 allows communication between two computers. SuperSwitch™ 1 includes a PCIe x4 host adapter attached via a PCIe x4 cable to One Stop Systems' CompactPCI Express x4 cable adapter, PCIe x4 cable adapter, or PCIe x4 Express Card. Using One Stop Systems' ExpressNet™ utility software, data transfers between two systems occurs at 20Gb/s. One Stop Systems' ExpressNet™ driver and utility software supports 64 bit CPUs as well as multi-threaded environments.
- SuperSwitch™ 2 allows communication between up to five computers, using One Stop Systems' PCIe x4 mezzanine cable adapter and four PCIe x4 cable adapters. SuperSwitch™ 2 enables data transfers at 20Gb/s.
- SuperSwitch™ 3 provides full network communication of up to eight compute nodes, or any combination of CPUs and I/O devices, using One Stop Systems' 8-port 1U switch. It provides data transfers at 20Gb/s.

Q: What are the advantages of SuperSwitch™?

A: In comparison to other network solutions, PCIe is less costly and operates at much higher speeds. Ethernet and Infiniband options cost as much as two-to-three times that of One Stop Systems' PCIe solutions. Ethernet and Infiniband also require bus-to-bus conversions creating increased latencies.

Q: What does it cost to connect two PCs with SuperSwitch™?

A: When ordering SuperSwitch™ to connect two PCs, use part number OSS-SS1-PCIe-2m. Please contact sales@onestopsystems.com to receive pricing for SuperSwitch™ 1's complete two-node kit with Linux driver. One Stop Systems offers OEMs discount volume pricing.

Q: Can I connect two PCs without the extra "switch" box?

A: The general misconception with Ethernet networking is that a "switch" is an external device. In fact, while One Stop Systems offers external switching devices, we have integrated the switching required for the PCIe networking onto internal PCIe cards called HIB4 and HIB5. Hence, SuperSwitch™ 1, which offers point-to-point communication for two PCs, contains one HIB2 PCIe redriver for the "master" PC, one PCIe cable and one HIB4 switch card for a single "node" PC plus the ExpressNet™ driver.

Q: Is SuperSwitch™ compatible with Windows XP Pro?

A: One Stop Systems may eventually move to some kind of Windows 64-bit OS, but we are sticking with Windows XP Pro for now. The ExpressNet™ driver is in Beta release for Linux 64-bit OS. Windows XP is due to be supported by the end Q1'08 by our standard and volatile roadmap.

Q: Does SuperSwitch™, under Windows XP Pro, support Windows Sockets 2?

A: The current ExpressNet™ Linux driver supports three protocols, the primary one is sockets using what we call DDT or direct data transfer, which is a memory to memory write (an augmentation to Linux " memcpy" command). We currently support Linux sockets interface, so I would expect to also use the latest Windows sockets interface. We also have TCP/IP over PCIe as part of the driver and a VISA instrumentation protocol. When using Linux DDT (sockets) we require 1 processor core in the system writing the data to be dedicated to the memory copy functions at the high speeds of 10Gb PCIe.

Q: What communication protocol does ExpressNet™ software use?

A: Refer to previous answer.

Q: Will we be able to preserve our current software investment in standard Windows File I/O?

A: SuperSwitch™ does not invade the file I/O area.

Q: If I connect two PCs with SuperSwitch™ and each PC has a locally attached 4-channel SATA RAID 0 system, what RAID-to-RAID transfer speeds can I expect for large (1Gbyte) files?

A: SuperSwitch™ operates on memory-to-memory transfers. The speed and ability of your RAID controllers and drives getting the file information to memory may have something to do with this. We have tested new PCIe RAID controllers and SATA/SAS HDDs that perform at up to 1.3GBytes/s in our PCIe storage systems. The server-to-server x4 PCIe ExpressNet™ speeds we see using two SuperMicro servers and the SS1 kit are 5.785Gb/s out of a theoretical

maximum of 10GB/s. We also see server to I/O transfers in excess of 600 Mbyte/sec which is used for a motherboard to RAID system.

Q: Can we approach these speeds for RAID-to-RAID file transfers across the SuperSwitch™ connection?

A: Yes.

Q: We only use 1GbE and see a paltry 30 to 40 Mbyte/sec for RAID-to-RAID file transfers. Can you approach x10 better for a low cost?

A: Yes.

Q: Is SuperSwitch™ proprietary? Will there be multiple vendors cooperating with compatible equipment?

A: One Stop Systems is leading this technology, having developed it after the fall of ASI. We are an executive member of the PXI-SA along with National Instruments, LaCroix and others developing this technology as an industry standard called HSIB. Our ExpressNet™ software is the model for this standards effort and we will incorporate any committee revisions into future revisions of ExpressNet™ (including the VESA interface).