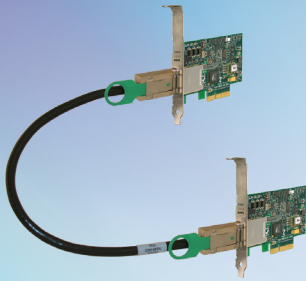


# PCIe over Cable

## FOR NETWORKING APPLICATIONS

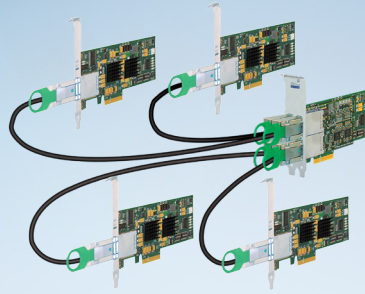
### SuperSwitch™

One Stop Systems' SuperSwitch™ hardware products with ExpressNet™ software support communication between up to 320 servers using the following networking topologies.



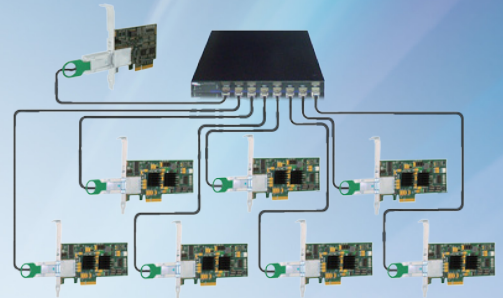
POINT-TO-POINT TOPOLOGY

To connect two servers, the host cable adapter installs in one computer cabled to the node cable adapter, installed in the second computer. ExpressNet is installed on each computer. This is the simplest and highest performance topology.



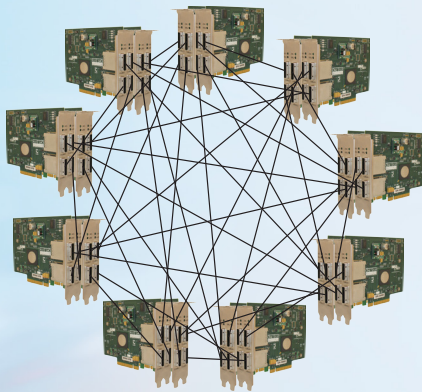
STAR TOPOLOGY WITH INTERNAL SWITCH

To connect up to five servers, the switch cable adapter installs in the host computer and is cabled to up to five downstream node cable adapters. ExpressNet is installed on each computer. This is a cost-effective and space-effective topology for a small number of servers.



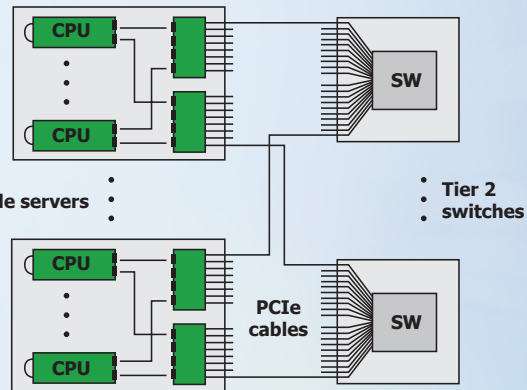
STAR TOPOLOGY WITH EXTERNAL SWITCH

To connect up to 20 servers, the cable adapter installs in one computer, up to seven node cable adapters are installed in downstream devices and all are cabled to the external switch. ExpressNet is installed on each computer. This is a highly versatile and scalable topology.



MESH TOPOLOGY WITH INTERNAL SWITCHES

To connect up to nine servers, two switch cable adapters install in each server and are cabled to all other servers. ExpressNet is installed on each computer. This topology provides full point-to-point performance levels between each server.



MULTI-TIERED SWITCH TOPOLOGY

To connect up to 320 CPU blades, each blade server connects to two switch blades. Each switch blade connects to eight external PCIe switches. ExpressNet is installed on each blade server. This topology provides full non-blocking performance over a large number of interconnected blades.

## ExpressNet Software

One Stop Systems' exclusive ExpressNet™ software suite allows direct data transfers as well as TCP/IP transfers between multiple processors. The software drivers initialize memory address translation registers in the non-transparent bridge components that allow data to be transferred from one CPU's memory to another.

With TCP/IP added, the interface is identical to a normal Ethernet port, except much faster. In addition to driver support, ExpressNet software handles hot-swap events and other networking functions. Currently, ExpressNet software support is available for Linux and Windows, with additional OS support following.

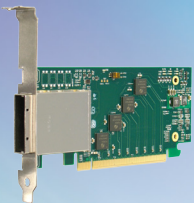
# PCIe over Cable

## FOR NETWORKING APPLICATIONS

### PCIe Gen2 solutions

ExpressNet 2.0 supports PCIe x4 Gen 2 products used in the point-to-point, star with external switch and multi-tiered topologies. PCIe Gen 2 products communicate between computers at 20Gb/s and

feature write-combining and DMA for faster throughput. Products supported by ExpressNet 2.0 are:



PCIe x16 host cable adapter  
(HIB25-x16)



PCIe x4 host cable adapter  
(HIB25-x4-H)



PCIe x4 host cable adapter  
(HIB35-x4)



10-port PCIe x4 Gen 2 switch  
(1U-SW-x4-2.0)



PCIe x4 and x16 cables  
(CBL-x4-xM)

### PCIe Gen3 solutions

ExpressNet 3.0 supports PCIe x8 and x16 Gen 3 hardware, transferring data up to 128Gb/s between computers. ExpressNet 3.0, like previous versions can be customized to the OEM's requirements. Communication between two or more computers with

version 3.0 utilizes the HIB38 x16 or the PCIe x8 dual or quad switch-based cable adapters and PCIe x16 or x8 Gen 2 cables. The x16 adapters support a point-to-point configuration. The x8 adapter supports a mesh topology of up to 9 servers.



PCIe x16 host cable adapter  
(HIB38-x16)



Switch cable adapter  
(HIB38-x8-QUAD)



PCIe x8 cable  
(CBL-x8-xM)



PCIe x16 cable  
(CBL-x16-xM)

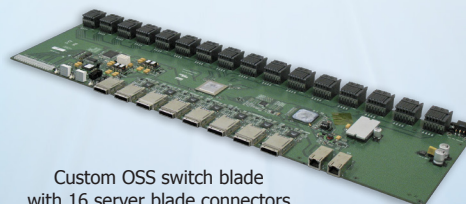
### Networking within a 640 CPU HPC system

The following is an example of a high performance computing application using custom PCIe over cable as the primary blade-to-blade communication network.

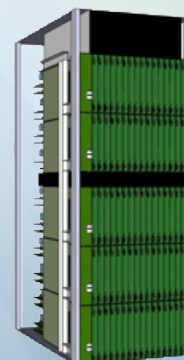
The system is comprised of two racks with each containing five blade server chassis. Each chassis contains 32 blades with two to four redundant switch blades. Each switch blade uses PCIe over cable to connect to multiple 40-port external switches. This provides complete non-blocking communication between each server blade at 20Gb/s.



Server blade with  
two server boards



Custom OSS switch blade  
with 16 server blade connectors  
and 8 PCIe over cable  
connections



HPC system with 640  
CPUs communicating at  
20Gb/s using PCIe over  
cable. The total PCIe over  
cable network throughput  
is 6,400Gb/s.



Call us today to build your own  
PCIe over cable networking solution!  
**(877) 438-2427**