The Top-10 Benefits of USB Device Connectivity

SILEX takes a look at the Top-10 ways businesses, government agencies, homeowners, resellers, and system integrators can utilize USB device servers to connect USB devices directly to a network.

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10 Applications of USB Device Networking to Improve Personal and Business Operations

Today's most clever social scientist could say that what really separates us humans from the animals, even the most intelligent, productive species, is our ability to reason, think, and plan. We've created all kinds of high-tech gadgets to help us keep it all together, to speed communication, and to make life easier. These devices—computers, cell phones, pointing devices, printers, scanners, digital cameras, storage devices, etc.—have all supposedly been created to make us more functional, more productive, more connected in our complex societies.

Ultimately it's not necessarily the type of devices we have, or even how many, but *how* best we use them—even network them to operate and communicate with each other. It could be argued that it's definitely "quality versus quantity" regarding our use of peripheral devices in the ever-increasing multiplicity of devices we work and live with.

This white paper examines USB (Universal Serial Bus) device connectivity and explores the "Top-10" benefits of device interoperability. During this discussion, the following items will be addressed:

The "Top 10" applications of USB device connectivity.

The best utilization of USB devices for the benefit of many people in small to large offices and workgroups.

The key benefits of USB device connectivity that businesses can capitalize on.

How SILEX TECHNOLOGY is advancing USB device connectivity technology.

Introduction—USB Connectivity

Most computer devices available today feature USB connectivity to plug into one or two USB ports on a desktop PC, laptop, or handheld computer. USB connectivity provides an expandable, plug-and-play interface that ensures a standard, low-economy connection for peripheral devices such as multi-function printers, keyboards, mice, joysticks, printers, scanners, digital cameras, storage devices, modems, video conferencing cameras, and numerous other devices.

USB has a maximum bandwidth in its basic form of 12 Mbits/sec (equivalent to 1.5 Mbytes/sec). USB 2.0 Hi-Speed dramatically increases capacity to 480 Mbits/sec.

With so many USB devices available today, you can run out of USB ports on your computer very quickly. USB hubs provide convenient access to multiple USB devices. However, these devices typically only remain available to a single user. In an office environment of any size, workers using numerous USB devices need a solution that allows for network device sharing among one to many workgroups.

USB Device Networking

Relatively new to networking, a USB device server is designed to provide easy network accessibility or sharing of USB products. USB device servers make it possible for USB peripherals such as all-in-one printers, scanners, digital cameras, storage devices, hard drives, printers, electronic whiteboards, etc. to be used and shared by client PCs on a Local Area Network (LAN) or wireless LAN.

Ideal for home office, small office, classroom, or enterprise workgroup use, a USB device server is available to support both Ethernet and WiFi networks.

The Top 10 Applications of USB Device Networking

SILEX TECHNOLOGYtechnology has been helping people customize network configurations with printer connectivity for years. It is from this experience that the company has leveraged its print connectivity experience to develop new USB device connectivity products, and constructed the *Top 10 Applications of USB Device Networking.* Starting with #10:

#10 The Business Network—Workgroups typically utilize many USB peripherals beyond their keyboards and mice. Multi-function printers, scanners, laser printers, and external storage drives are typically the next most utilized USB-enabled devices.

Historically each of these devices has been utilized by or connected to a single user or workstation. For example, a marketing team may have one worker or IT administrator responsible for all CD/DVD burning and scanning.

With the networking capabilities of device servers, an entire workgroup can experience increased productivity and convenience of multiple USB device sharing and cost savings.

In addition, the USB device server makes a variety of printers immediately available or shared by everyone on the network. A user can then print documents more suited for a photo printer, or color inkjet rather than only printing to a standard laser printer in an office environment.

Connecting a pool of printers, all in one location, creates a one-stop solution for a variety of printing needs. If certain networked users don't need or shouldn't have access to a particular printer in the pool, IP filtering access control functionality can prevent illegal network access.

Today's business climate also creates a high need for document privacy at the printer. With the use of a fingerprint reader attached to device server, companies and government agencies can quickly utilize biometric-based secure printing requiring authorized users to touch their finger on the fingerprint reader at the printer before a sensitive document is printed out providing "for my eyes only" printing.

#9 The Mobile Worker—Consider the U.S. Department of Defense's Land Warrior system for a moment. The Land Warrior concept is a body-worn system that uses USB as its "personal network" and features a master USB controller. The Land Warrior has several subsystems: the weapon, integrated helmet assembly, protective clothing and individual equipment, computer/radio, and software all connected via USB.

Similar to the modern U.S. soldier, today's road warriors also can access multiple USB devices through a device server. Through mobile tools like laptops, PDAs, handheld reporting devices with modems, and cell phones, workers are able to connect to networked USB devices for shared file or database access, storage, digital photo/video transfer, shared contacts, and printing through a USB device server.

#8 The Backup Plan—Establishing a strong backup strategy is vital in network environments of any size. Many offices may not be able to justify the expense of network attached storage (NAS) devices as part of a back-up plan. A USB device server literally allows an external USB hard drive to become an inexpensive network attached storage device.

Regular back-up schedules can be timed to accommodate multiple network users. And, with the portability that USB storage devices provide, companies have increased flexibility to move information to a different location following a network problem requiring backed up information.

#7 The Graphic Designer—"Attention to detail with expressive freedom in a tangible, creative working environment" stereotypically describes the office style of a graphic designer or team of designers. These artists need to have their creative tools immediately available at all times.

Surrounding the graphic designer's workspace, you will most likely find a photo printer, digital camera, internal or external DVD/CD burner, scanner, and storage . A USB device server is a must for device sharing among members of a networked workgroup.

#6 The Networked Camera—Consumers and corporations can benefit from connecting a USB-enabled digital camera to a network. One of the unique benefits is exemplified by an amusement park where a camera is situated to take digital pictures of people in various locations such as the climatic point on a roller coaster. With a digital camera attached to a wireless USB device server an operator can quickly access the digital images wirelessly to print out for its consumers. This eliminates the need to physically remove a memory card/stick, or running long lengths of network cable to a very remote location.

Within the home, there are several home networking applications for networked cameras. The simplest is to place a wireless USB device server in the most strategic location within a home. Family members can then access digital images from the family camera wirelessly at any computer within the home. Some digital cameras come with a docking station for the camera. With a device server, the docking station can be used in the same situation.

Finally, many printer manufacturers now provide small photo printers that allow consumers to easily print out their favorite images on photo paper in their favorite photo size. The USB device server allows these printers to be shared among many different people by connecting them directly to a network.

#5 Wireless iPod Access—Apple's iPod has become one of the latest electronic phenomenon in recent memory. More than a million of the music devices have been sold around the world. Whether it is the sleek design, the easy functionality, the sound quality, the diverse storage options it provides, or its cool controls, there is a lot to compel music lovers to make this a 'must have' device.

A wireless device server takes the cool factor one step further. With it iPod users can simply walk into their home or office and connect the iPod to the wireless device server placed in any convenient location. As the iPod recharges, users can download new music wirelessly from their computer to the iPod so it is ready to go the next time they leave.

#4 The Sewing Professional or Enthusiast— Today's sewing machines provide more capabilities and options than ever before. It was only a matter of time before sewing professionals and enthusiasts looked to computers to increase the availability of new and exciting patterns for use in the creation of the innovative and diverse clothing styles of the 21st century.

Most name brand sewing machine manufacturers including Janome, Pfaff, Brother, Bernina, Singer, and others have come out with machines that include USB connections. The manufacturers intended these USB connections to allow the machines to connect directly to a PC or to a storage device such as a USB pen drive, Zip drive or CD-R drive in order to download patterns and software upgrades to the sewing machine.

A wireless device server will allow users to wirelessly move software upgrades and patterns directly to the sewing machine eliminating the need to use removable storage disks or to have a PC present. It also allows the sewing machine to be in the sewing room, while the computer is in a different room instead of side-by-side.

#3 The Conference Room—The static conference room featuring only a phone, whiteboard, or easel pad is hardly a hub of activity, learning, and collaboration. Meeting participants need the flexibility to share the room's resources directly in the room and even remotely or wirelessly.

Sharing the functions of an electronic whiteboard with a USB interface, give workers the ability to compare and store meeting notes and even select the best printer to review hard copies. Scanned whiteboard data can be immediately retrieved from a wireless PC.

Attaching all conference room USB devices allows all meeting room participants to use the equipment. A simple meeting room can become a dynamic center of interactivity

with the electronic whiteboard, MFP or laser printer, and shared storage drive all networked through a device server.

#2 Network Scanning—Whether to create a paperless office environment or to comply with government regulations such as the Sarbanes-Oxley Public Company Accounting Reform and Investor Protection Act, companies are utilizing scanners in order to image documents more than they ever have.

The problem is that most scanners are designed to work on just one PC causing a user to physically go to a dedicated PC with a scanner attached to scan a document. They would then need to save the image to a disk, thumb drive, or other storage medium— a cumbersome alternative in a busy enterprise network.

A USB device server allows a USB scanner to be connected directly to a network for cost efficient distributed network scanning that increases productivity for many people. There are multiple benefits of a networked scanner; first, they allow companies to meet the requirements of government regulation related to document imaging; second, it increases productivity within corporate environments through network scanning; third, they provide IT professionals with flexible options in infrastructure planning; fourth, improves customer and employee service; and fifth increases convenience by making it easier for people to share scanners on a network.

#1 Multi Function or All-in-One Printer Connectivity—One of the greatest innovations has to be the combined functionality of multifunctional or all-in-one printers (MFP) that typically combine a copier, printer, scanner, fax, and storage options all in one convenient device. MFP's allow companies—especially small or home businesses—to save cost by providing up to four or five devices in one.

The problem with MFP devices is that they typically are only available to a single computer terminal—they do not work well attached to a network. With a device server companies can connect an MFP directly to a network for use by all users including the ability to remotely scan, copy, print, fax and store information.

Summary

There are many different ways to approach the utilization of USB device servers within business or home environments. They give system integrators and resellers strong tools to improve their client's productivity, increase add-on sales, and increase their profit line.

Along with its full line of globally renowned print servers, SILEX TECHNOLOGY has developed some of the first USB device servers available in the U.S. silex's family of device servers, including the SX-1000U, SX-2000U2, SX-3700WB wireless, SX-5000U2, and StitchLink, can literally change the way information and technology is shared in a home, small office, or any network business environment. With numerous USB devices available for a wide variety of applications, silex's device servers can provide the best

utilization of USB devices to increase productivity, increase return on investment, lower costs and expenses, convenience, and streamline operations.

SILEX TECHNOLOGY USB Device Server Technology

Its parent company, SILEX TECHNOLOGY has more than 30 years experience designing, manufacturing and marketing embedded products and print servers. SILEX TECHNOLOGY has leveraged this heritage to create the largest line of device servers available.

With silex's device server network connectivity drivers and utilities in its device servers, USB-enabled devices such as printers, multi-function printers, scanners, storage devices, digital whiteboards, or digital cameras are easily converted into shared resources on networks of any size. Enterprise workgroups, home networks, or small branch offices benefit from the convenience of accessing conventional, one-user USB devices and the freedom to share them with co-workers over an existing network.

Device Server Features

SX-1000U—The SX-1000U is a one-port, 10/100 Base-TX USB device server designed to connect USB devices directly to a network.

SX Virtual Link, a USB utility that allows the PC to virtually recognize the peripheral as a directly attached device over hard-wired Ethernet instead of a physical USB cable connection. Because of this, users can still take advantage of the convenience of the bundled USB device tools including the device operation status monitoring over the network just as if they are using it locally.
- Compatibility with Windows and Macintosh
- SILEX's Web browser administrator manager utilities
- Enhanced security IP filtering

SX-2000U2—The SX-2000U2 is a one-port, 10/100 Base-T USB 2.0 Hi-Speed device server designed to connect high performance USB devices such as scanners directly to a network.

Instantly convert USB 2.0 Hi-Speed devices to a shared network resource
SX Virtual Link, a USB utility that allows the PC to virtually recognize the peripheral as a directly attached device over hard-wired Ethernet instead of a physical USB cable connection
USB device resource manager allows all computer users on the network to use USB printers, multi-function printers, scanners, digital card readers, external storage, electronic whiteboard, digital cameras and others.
- Compatibility with Windows and Macintosh
- Web based device management
- Enhanced security IP filtering

The **SX-2000WG** is the wireless/wired version of the SX-2000U2.

SX-5000U2—The SX-5000U2 is a four-port USB device-to-device server designed to connect a variety of USB devices directly to a network. Connecting up to nine devices, it is the first USB 2.0 Hi-Speed device server available.

- First USB 2.0 Hi-Speed server to connect USB devices
- USB device resource manager that allows all computer users on the network to use USB printers, multi-function printers, scanners, digital card readers, external storage, electronic whiteboard, thumb drives, or digital cameras
- With a USB hub connected to the SX-5000U2, users can share up to nine USB devices on the network
- Easy USB Flash or Pen Drive configuration
- Windows or Macintosh operating systems
- IPv6 supported—The next generation of TCP/IP is the industry solution to expand the speed of the Internet and the number of IP addresses.
- silex's Web browser administrator manager utilities
- Enhanced security IP filtering
- Features automatic e-mail printing
- Printer status monitoring

StitchLink—StitchLink is a one-port, 802.11b Wireless USB device server designed to connect USB sewing machines directly to a wireless network.

It is the industry's first wireless USB device server specifically designed for sewing machines
It is compatible with Windows XP and Windows 2000
Includes intuitive quick setup utility for easy setup
Optional USB thumb drive wireless setup

Benefits for Business

- Enhanced Security—IP Filtering Access Control

With concerns over network security, a device server must feature technology that eliminates the worry that these shared devices are not accessed by unauthorized people on the network. IP filtering can prevent unauthorized access to network USB devices by utilizing specific IP addresses or a range of IP addresses.

- Multiple Ports and USB 2.0 Hi-Speed

Multi-port USB device servers featuring USB 2.0 Hi-Speed capability are imperative. USB 2.0 Hi-Speed extends performance by up to 40 times over existing USB 1.1

capabilities and broadens the range of peripherals that may be attached to a PC. With a USB hub connected as one of the four USB devices, users may share up to nine USB devices on the network.

- Wireless Access

Wireless USB device servers provide added flexibility by allowing a USB device to be placed anywhere in a wireless network.

- Automatic e-mail Printing

A USB device server can retrieve e-mail for up to four designated e-mail addresses and print them automatically without a PC. USB device servers can automatically print all e-mail messages, or the user can apply keyword filters to specify the e-mails to be printed. The servers can also send an e-mail message to a user when any error occurs with a printer.

- Advanced Automatic Device Discovery and Configuration

Ideally, USB device servers should support the network plug and play capabilities of USB in Windows. The device servers' automatic network printing service discovery and configuration should be available for Mac OS X users, and eliminate the manual configuration of any IP addresses or network setting for a printer.

- Easy USB Flash or Pen Drive Configuration

By simply creating a template file with the initial setup parameters on a PC and saving it in a standard USB flash or pen drive, users or network administrators can quickly roll out multiple peripherals quickly and easily. By inserting the USB pen drive into the device server, the setting information will be retrieved in a few seconds.

About SILEX TECHNOLOGY EUROPE

SILEX TECHNOLOGY can look back on more than 30 years of experience and quality workmanship. Nearly all well-known printer manufacturers employ the network printing technology from SILEX TECHNOLOGY and provide this as an OEM (Original Equipment Manufacturer) embedded component for their products. Through print and device servers, biometric products as well as sewing machine adapters you also have the possibility to be made aware of and decide in favour of SILEX products and their advantages. Discover the quality trusted already for years by leading printer manufacturers. More information on www.silexeurope.com.

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Disclaimer:

At the time of this white paper, SILEX USB device servers do not support USB devices using isochronous data transfer over USB such as web cameras and speakers. Some

USB devices may not be supported depending on the USB device driver specification. Please visit SILEX web site for the latest compatibility information.

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HANTZ + PARTNER
The Upgrade Company! www.hantz.com

Deutschland:
Tel.: 0761 / 59 21 00
Fax: 0761 / 58 52 28

Schweiz:
Tel.: 061 / 27 311 - 31
Fax: 061 / 27 311 - 39

Österreich:
Tel.: 01 / 58 55 430
Fax: 01 / 58 55 460