Products & Services for the Library WLAN

Open Source Wireless Products

If you want a completely transparent wireless network service, then you may not need anything beyond the basic components: access points and connection hardware to the wired network. If your library requires additional features, you may need additional hardware and software. Even a simple feature, such as implementing the display of a click-through policy page, cannot be accomplished without additional network components.

ZoneCD from PublicIP–One Open Source solution that's become popular for providing hotspots in a library setting is ZoneCD from PublicIP. ZoneCD works in conjunction with the access points of the wireless network to provide additional control and features. Some of the features that it offers include:

■ the ability to redirect users to a splash page that could display the library's logs and present information, i.e., polices, restrictions, and credits;
■ authentication; and
■ content filtering.

ZoneCD requires a computer with two Ethernet cards installed between the access point and the library's firewall. The computer must have a CD-ROM drive and a diskette drive. The software operates from a bootable CD that runs a specialized version Linux, and it reads configuration files stored on a diskette.

To create the configuration diskette, one must set up a "Master Account" on the PublicIP Web site. When logged onto the Master Account, a "wizard" walks you through each of the steps of configuring and customizing your wireless network.

As an Open Source product (distributed under the GPL license), ZoneCD is available without cost. It also comes with no guarantee or official support. The PublicIP Web site includes full documentation on how to download the software, create a configuration file, and operate the system. The site includes a set of forums devoted to the use of ZoneCD in libraries.

CUWiN–Another Open Source application for creating a wireless network was created by the Champaign-Urbana Community Wireless Network, or CUWiN. This software works somewhat like ZoneCD, but it's targeted toward the creation of free municipal wireless networks. The software does not seem to be widely used for library wireless networks.

Commercial Wireless Products

Many companies offer products and services that extend the features and security of wireless networks. These companies provide components for integrating the WLAN with the existing enterprise infrastructure of an organization, or they provide tools to assist with the management of the wireless network.

Bluesocket is a company that produces products and services that extend the features of a wireless network. It offers a suite of products that enhances wireless security, provides authentication services, and manages bandwidth. Bluesocket's product for libraries is **BlueSecure Controller**, which includes the following features:

■ patron authentication–it provides a variety of authentication options, including RADIUS, LDAP, NT Domain Server, Windows Active Directory, a local authentication database, and digital certificates. A customizable login page can be created, and this page can be "branded" with a particular library's logo and can display such information as access restrictions, liability waivers, and/or use policies;

- bandwidth management—it can place limits on the maximum bandwidth allowed; bandwidth can be set according to user type or application;
- network scheduling—the network administrator can establish a schedule of when users may or may not access the wireless network;
- usage reports; and
- centralized status monitoring and management.

PublicIP's ZoneCD for Library Hotspots
www.publicip.net

Champaign-Urbana Community Wireless Network
www.cuwireless.net

On its Web site, Bluesocket presents a range of models available, scaled according to the number of concurrent users of the wireless network.

Bluesocket markets its products directly to libraries and has entered into business partnerships with library automation vendors. Dynix and Sirsi had individual agreements with Bluesocket prior to their announced merger in June 2005. In June 2004, Dynix introduced Horizon Wireless Gateway, which was based on Bluesocket technology. At about the same time, using Bluesocket and Cisco as technology partners, Sirsi announced it would offer consulting services to assist library customers with wireless networks.

Library-Specific Products & Services

Although a library's wireless hotspot functions much like hotspots in other settings (in coffee shops, airports, etc.), there are some features unique to the library domain. For example, as mentioned previously in this report, some libraries may want to limit wireless access to their cardholders. One way to accomplish cardholder verification is through the 802.1X framework, which defines a mechanism for authentication. The 802.1X framework, though, assumes the presence of a RADIUS or LDAP server. These types of servers may be a relatively common component of a university or college network infrastructure, but they are fairly rare in the public library arena.

Most public libraries, however, have comprehensive user databases within their automation systems, so these library types (those without access to RADIUS or LDAP servers) can utilize this bank of information to validate wireless network users. The SIP2 (Standard Interchange Protocol) and the Circulation Interchange Protocol formulated by NISO (National Information Standards Organization)—referred to as NCIP—standards can be used to facilitate this capability.

The original SIP2 and NCIP standards allow system-to-system operability among the circulation-related functions (i.e., as patron and item data) of integrated library systems. Vendors have developed a number of products—using the SIP2 or NCIP protocols to query the automation system's patron database—that enable libraries to validate wireless network users.

In January 2004, the company now known as **Polaris Library Systems** introduced Polaris Wireless Access Manager (WAM) to assist libraries in the deployment of public wireless hotspots. This product uses the SIP2 protocol to compare wireless user information with cardholder information stored in a library's automation system. WAM operates with the company's own ILS product as well as with competitors' systems, including Dynix Classic, Millennium (from Innovative Interfaces), Sirsi's Unicorn, and other systems that have a SIP2 authentication service. The product is a turnkey system that contains the WAM Gateway hardware, an access point, and the WAM management software.

Other features of WAM include its ability to: meter bandwidth; schedule when the wireless network will be available; and generate reports that describe the use of the wireless network.

Bluesocket BlueSecure Controller
www.bluesocket.com/pdf/bluepaper/
BS%20Controller%20Family.pdf

Polaris Wireless Access Manager
www.polarislibrary.com/products_Services/wam_info.asp

TLC WirelessSolution
www.tlcdelivers.com/tlc/pdf/wirelesssolution.pdf

Sirsi PocketCIRC
www.sirsi.com/Pdfs/Products/SirsiPocketCirc.pdf

The Library Corporation, or TLC, offers two products to assist a library with creating a wireless hotspot. The company's Wireless.Solution product includes an integrated firewall and up to five simultaneous VPN connections. This combination of features makes it suited for use as a public hotspot as well as for staff use. The more advanced version, Wireless.Solution Pro, also includes the ability to provide access control, manage bandwidth, optionally collect fees for accessing the network, and create an interface customized with the library's own logos and graphics.

SirsiDynix—As noted previously in this chapter, SirsiDynix has a business relationship with Bluesocket, which provides consulting services for customers installing wireless networks. SirsiDynix also has developed a product called Sirsi PocketCIRC. Designed to give the

library flexibility in performing circulation functions, Sirsi PocketCIRC is software that runs on a PDA with wireless access to perform circulation functions on a Sirsi Unicorn system. Essentially, Sirsi PocketCIRC is a slimmed-down version of the circulation client ported to run on the Windows CE operating system. This product can help a library take advantage of a wireless network to provide some of the circulation-related functions.

Other Wireless Technologies

Bluetooth—While 802.11-based technologies basically replace the Ethernet cable for a computer, Bluetooth is a wireless technology designed to replace cables to a computer's various peripherals. This transmission standard connects a computer—without wires—to printers, keyboards, and a mouse. Bluetooth can also synchronize a PDA with a desktop computer. Many cell phones come with Bluetooth built in to connect to headsets or communicate

Bluetooth
www.bluetooth.com

Worldwide Interoperability for Microwave Access (WiMAX)
www.wimaxform.com
www.intel.com/netcomms/technologies/wimax
www.wi-fiplanet.com/wimax

with external devices. Cell phones can use Bluetooth to exchange address books, pictures, ringtones, or MP3 files.

Bluetooth shares the same part of the spectrum as 802.11 b/g, operating at 2.45 GHz. Generally, the two technologies coexist quite well. Like 802.11b/g, Bluetooth uses spread spectrum transmission, but it's based on high-speed frequency hopping. With Frequency Hopping Spread Spectrum (FHSS), the carrier signal that transmits the data changes very rapidly. Bluetooth divides the 2.45 spectrum into 79 channels, each 1 MHz wide, changing channels up to 1600 times per second. This frequency hopping keeps Bluetooth from interfering with other transmissions such as 802.11. Since it spends only a few microseconds at a time on any given channel used by 802.11, it causes little, if any, disruption.

But Bluetooth isn't a high performance transmission technology. It operates at slow speeds with limited range and consumes very little power. Most Bluetooth devices have a range of about 30 feet and transmit at about 1 mb/second.

Like any wireless technology, care must be given to security. Having a Bluetooth-enabled device without a password, PIN, or other security mechanisms enabled can lead to trouble. Viruses or other malware can be introduced to a device over a Bluetooth connection. The attacks on these devices have earned names such as "bluesnarfing," the stealing of information from a Bluetooth-enabled device; "bluebugging," illicit access to a cell phone conversation; and "bluejacking," anonymous messages sent to Bluetooth phones. All these intrusions are fairly easy to avoid by enabling basic security options.

RFID, or Radio Frequency Identification, continues to gain popularity in helping to identify library materials. With RFID, a smart computer chip resides in each book instead of a barcode. The chip is programmed with a unique identifier for the item. Unlike a barcode that requires physical contact to be read, an RFID chip responds to a scanner that can be some distance away. RFID facilitates improved automation of library functions, such as self-checkout stations and automated sorting.

RFID chips used in libraries operate on the 13.56 MHz band. Some of the major RFID chip/tag manufacturers for devices used in libraries include Texas Instruments, TAGSYS, and Checkpoint systems.

RFID and 802.11 wireless networks—both popular library technologies—coexist well. They operate on completely different parts of the spectrum and use different transmission protocols. Libraries should not experience significant interference between a wireless LAN and RFID equipment.

For more information about RFID, consult *Library Technology Reports* Nov/Dec 2003, "RFID Technology for Libraries" (39:6). Also, Walt Crawford's Mar/Apr 2005 issue of *Library Technology Reports,* "Policy and Library Technology," 41:2—in Chapter III, "Technology, Privacy, Confidentiality, and Security"—provides additional perspective on RFID.

WiMAX, or Worldwide Interoperability for Microwave Access, has gained a lot of attention even though it's in an early stage of development and deployment. While Wi-Fi targets local area networks within a fairly limited geographical area, WiMAX is a technology that enables wide area wireless networks. Some see this technology as a direct competitor with cable and DSL providers. WiMAX, also known as IEEE 802.16, transmits at a range of up to 31 miles and can deliver data at rates of up to 70 mb/second.

Under the hood, WiMAX operates much differently than 802.11 wireless networks. It operates in different parts of the spectrum, at the 2 to 11 GHz range. The MAC layer protocols of WiMAX do not follow the Ethernet-like rules of 802.11.

WiMAX has not yet experienced widespread deployment. The latest version of 802.16 was ratified in June 2005. With the standards in place, adoption of the technology is expected to build beginning in about 2006. Some products are already available. Intel, for example, has begun promoting it and has developed a chip (Intel PRO/Wirelesss 5116) that implements IEEE 802.16.

With ever-increasing interest in wireless technologies, WiMAX is a technology worth watching, though it may not be something quite ready to implement today.