

Point-of-Sale Networks Simplified

Networked broadband connections open up new opportunities. Networking is now relatively easy for the non-technical user of payment solutions.

Standardized products and easy-to-follow configuration wizards make the process simple and pain-free.

Networks Key to Extending Speedy Card Acceptance

Merchants and other organizations need to handle more transactions during peak times to increase sales and provide better customer service as consumers use credit and debit cards at an ever-increasing pace. Traditional dial telephone authorization is a frustrating and costly bottleneck, but lightning fast, always-on connections using Internet Protocol (IP) can deliver an entirely new level of speed and security. Local area networks (LANs) allow those connections to be shared among many devices, which eliminate the need for multiple phone lines.

While many people may be intimidated by the prospect of computer networking, today there is a wide range of standardized products and easy-to-follow configuration wizards that have dramatically simplified the process. Networks have become consumer-ready, with market research firms projecting that home networks will grow from about 10 million in 2003 to more than 30 million in 2008.

De-mystifying Networks

A network is simply a system of two or more devices -- computers, terminals, printers, phones -- linked by a telecommunications system that enables them to exchange information. Today, network access and equipment has become inexpensive and more widely available than ever before, allowing anybody to build a broadband network at their home or business.

Traditionally, integrated “always on” networks have been the domain of large or medium companies with IT departments, help desks, and support personnel. In the past, small business point of sale (POS) usually relied on modem-to-modem networks where a countertop terminal would dial in to a card processor, while a separate PC handled back office functions. Now small businesses can easily install their own integrated networks, using low-cost broadband connections and components that can often be purchased “off the shelf” at local computer stores.

Most broadband networks require three components: a router (also known as a gateway) that shares a single broadband connection among multiple devices, a modem connected to a broadband network and one or more IP devices (such as POS terminals and PCs). For today’s small business merchants, the most common broadband networks are DSL and cable. The broadband router

allows you to connect more than one IP device to your broadband service, so that they can all access the Internet through one public IP address.

IP Addresses

Most DSL and cable modems will provide the merchant with a single Ethernet port and a single IP address. The router allows you to build a local network (LAN) and share the Internet connection with all devices. Even low-cost routers support up to 255 devices.

The IP address is a set of four numbers separated by periods; each number can be zero to 255 – an example might be 255.66.216.9 – and those four sets of numbers represent a unique address for a particular computer on the Internet. When a broadband modem is attached to the Internet, it has one public IP address; the router uses that public IP address, but it also assigns private IP addresses to the devices that will be sharing the broadband connection. Most private networks will use a numbering scheme such as 192.168.0.0 to 192.168.0.255 to represent up to 255 devices that can access the Internet.

The router functions essentially as a traffic cop for the devices attached to it. Using an Internet technology known as DHCP (for Dynamic Host Control Protocol), the router distributes and supervises the private Internet addresses on your local network. When the IP device is powered up, it will pull the necessary information from the router. This eliminates the need to manually program each device on the network with a private IP address.

Companies of all sizes use routers and prices can vary from as low as \$30 to as much as \$30,000. The most popular consumer grade broadband routers today cost less than \$100 and provide many of the same features as higher end corporate routers. The router will come with a quick installation guide, and an installation CD that will have a step by step installation wizard and the router documentation. The installation wizard will walk you through configuring your router for the network you are on. Should you have problems or questions, the router wizard and manuals will also provide a support line number and information on how to access an extensive online help system.

DSL or Cable

DSL and cable modems are the most popular and widely available means to bring IP connectivity to a location. In any given area, cable is typically faster,

with speeds ranging from 512K to 5 megabits per second, depending on the local service provider. DSL, with transmission of 256K to 3 megabits per second, may be more readily available as it can be delivered over existing telephone connections. A single DSL or cable modem connection can be routed to multiple devices over Ethernet cabling or wireless (Wi-Fi, also known as 802.11b and 802.11g) using a simple, low-cost gateway device.

DSL is a method of transmitting both voice and data signals across a single phone line, using frequency separation technology to prevent the signals from interfering with each other. Available from local phone carriers and other service providers, DSL can be self-installed if phone wiring is already present, or can be installed professionally.

Cable also uses frequency separation technology to transmit TV and data services over the same cable line without signal interference. Cable companies typically install cable modem service for little or no cost, and many now also allow consumers with existing cabling to purchase and self-install their own modems. Cable may be the preferred method for those merchants who already have cable TV and wish to add Internet service.

Finding service availability is usually very easy. Once you know what service providers are in your area, you can find out if your location can be serviced by checking their web sites or calling their service numbers. DSL has a distance limitation that requires the customer to be within about 12,000 feet of the phone company's switching equipment, commonly referred to as the "central office." For cable, your location has to be on the route of the cable company's lines. To determine whether service is available, most DSL provider web sites will ask you to enter your phone number and cable company web sites will typically ask you to enter your address.

Broadband Installation and Configuration

Once you have chosen a service there will a number of installation options to you, from self-installations, to professional installations on both the modem and the PC.

For self-installations on DSL, a modem and an installation kit is sent to the user. The installation kit will generally come with a frequency splitter, a quick

reference card, an installation CD with installation wizard and manual, reference manual, and a tech support number. The quick reference card gives detailed instructions on physically connecting your equipment while the installation wizard will take you step by step from plugging in the power to the DSL modem to configuring system settings. The CD will also have a detailed user manual that can answer any questions you might have that is not covered in the quick reference information. Of course, tech support is also available for those who wish to talk to a live person.

For cable service, a technician will generally visit the location and insure location is configured correctly. They install the cable modem and an Ethernet port network card. This port is generally set for auto configuration and a router or device connects to the Ethernet port without any configuration required. Some cable companies may require that the physical address code (known as media access control or MAC address) of the primary PC or terminal be “cloned” into the modem to allow for access – but usually the installation wizard will automate this step. Check with your service provider on requirements. If you should have additional questions or require help, you can always contact the support number provided with your service.

Wi-Fi

Unless you already have Ethernet cabling installed throughout your facility, you may be inclined to adopt wireless technology to manage your local networked devices. Installing new Ethernet cabling is costly, disruptive and time-consuming, particularly given the availability and low cost of Wi-Fi.

Wi-Fi is a relatively new technology that has further extended the usability of IP. It uses Ethernet technology to transmit broadband signals without having to use cables. Wi-Fi uses standardized radio transmissions, which can be secured by encryption and other means, to establish a wireless LAN. A merchant who has a DSL or cable modem connection can extend that one IP connection to multiple devices at little installation cost.

Wi-Fi eliminates the need to run Ethernet cable from the router to the IP device, so LAN installations are quicker and less expensive and provide merchants with greater flexibility. Connecting the Wi-Fi router to the broadband connection is the same as the wired counterpart, but the configuration of an SSID (SSID is essentially a name you give your network), administrator

password and encryption key add an additional step. Many routers come pre-configured with an SSID set to the manufacturer's name and a simple password such as "ADMIN" – because these SSID names and passwords are relatively easy to obtain, it is important to change them to names and passwords of your own choosing in order to prevent unauthorized access by other devices outside your network.

Changing the SSID, password and encryption key should be clearly set out in the manual and self-install CD that comes with the router and the router manufacturer's help line can assist you if you have problems. After you have established an SSID and encryption key on the router, you also have to set them on the IP device in your network – the router manufacturer may automate this process by creating a program that can be run on multiple devices. Once the SSID and encryption key is configured on the device, it will be able to connect wirelessly to the router and DHCP will take over and configure the private IP address.

Up and Running

Now that your network is operational, you have the ability to communicate quickly anywhere in the world. Though networks are built with a single application in mind, new programs and opportunities are easily and inexpensively added, increasing the value of the network to the merchant. It does not take long for the merchant to find new additional services and expanded uses for the network; for example, some merchants want the ability to provide wireless "hot spot" access so that customers with Wi-Fi equipped laptops and other devices can access the Internet through the merchant's gateway.

Resources

D-Link: Configurator for Small to Medium Businesses

http://www.dlink.com/configurator_v2.0/step_1.asp?configuratorSection=smb

Linksys: Small Business Network Builder

<http://www.linksys.com/configurator/bconfig.asp>

Microsoft: How to Set Up Your Home or Small Office Network

<http://www.microsoft.com/windowsxp/using/networking/setup/default.msp>

Gateway: Wireless Networking Tutorial

<http://support.gateway.com/s/tutorials/index/Tutorials.asp?cat=8&CatTitle=Storage%20and%20Networking&subcat=15&SubTitle=Networking&Topic=207>