GO Software Inc.
Wireless Credit Card Processing with PCCharge

PCCharge will wirelessly connect to credit card processors and automatically process credit cards wirelessly—if properly set up to run with the wireless data phone services in existence. This document is intended to give you an idea of the general method of doing this and provide an overview of some of the different options available.

Scope:

This document focuses on methods of wirelessly connecting to the Internet to process credit card transactions using laptop or desktop computers running Windows operating systems. Most cellular phones and accompanying software mentioned include other functionality, such as replicating calendars and contact lists with personal computers. There are many manufacturers and brands of cellular telephones available, and this document will only touch on a few of the most popular brands: Nokia, Motorola, and Ericsson.

Credit Card Processors:

Nova, IPGS, VisaNet, and FTMS are currently the only **PC**Charge-certified credit card processors allowing merchants to connect to them via standard TCP/IP (Transmission Control Protocol/Internet Protocol). These are the only processors that can be used with wireless Internet transactions.

Terms You May Encounter:

Analog – This is the original form of cellular service, launched in October, 1983 in the U.S. (and earlier elsewhere). This service uses an older waveform transmission technology instead of the zeros and ones that a digital system uses. It is more prone to interference, static, eavesdropping, and cloning than digital systems, but it is still deployed in many parts of the world where the advanced technology (and higher cost) of digital systems is not as necessary.

Digital – This newer form of wireless communications that takes converts all voice transmissions to computer language (zeros and ones, or “binary” language) and then reconstructs them into the original voice format at the other end. Digital is more secure than analog, and it is more resistant to static or fading signals. You normally need to have a digital phone to run credit card transactions from your PC. However, there is mention below of a PC card from Motorola that works in analog mode.

Dual mode – This term describes a cell phone that works on both analog and digital networks.

PCS (Personal Communications Services) – This is a two-way, 1900 MHz digital voice, messaging and data service designed as the second generation of cellular communications. PCS is an all-digital service specifically designed for U.S. operations and is available in metropolitan areas. PCS is a term coined by the Federal Communications Commission to describe a digital, two-way, wireless telecommunications systems licensed to operate between 1850-1990 MHz, although the FCC's rules describe "PCS" as a broad family of wireless services without reference to spectrum band or technology. PCS is capable of increased call capacity. PCS networks include CDMA, TDMA and GSM networks.

CDMA (Code Division Multiple Access) – Qualcomm developed this “spread spectrum” technology used in some digital cellular, personal communications services and other wireless networks. CDMA is known as spread spectrum technology because it uses a low-power signal that is "spread" across a wide bandwidth. With CDMA, a phone call is assigned a code, which identifies it to the correct receiving phone. Using the identifying code and a low-power signal, a large number of calls can be carried simultaneously on the same group of channels.

TDMA (Time Division Multiple Access) – This was developed by AT&T Wireless, Bell Atlantic Mobile, and others. TDMA is a technology designed to increase the channel capacity by chopping the signal into pieces and assigning each one to a different time slot, each lasting a fraction of a second. Using TDMA, a single channel can be used to handle simultaneous phone calls.

GSM (Global Systems for Mobile Communications) – This is a digital cellular or PCS standard used throughout the world and is the standard in Europe. It is a type of time division multiple access (TDMA) digital wireless network that includes encryption features. GSM is rapidly being deployed worldwide and is the standard in Europe at 900MHz. In the U.S., carriers are deploying GSM at 1900MHz, making GSM phones sold in the U.S. incompatible with European GSM phones, and vice versa. GSM currently appears to be increasing in popularity in the United States.

WAP (Wireless Application Protocol) – WAP phones allow mobile users to access live interactive information services and applications from the screens of mobile phones. Therefore, WAP doesn’t apply to the scope of this document, which is to describe methods of wirelessly connecting to the Internet to process credit card transactions using a laptop or desktop computer.

CDPD (cellular digital packet data) – CDPD uses Internet Protocol-based packets to format its data. All transmissions are encrypted, and users pay only for delivered packets. CDPD also utilizes advanced sleep modes to extend battery life. Nationwide coverage is proving difficult to implement because it means competitors will have to work together, and software developers are learning that their "off-the-shelf" TCP/IP applications do not work well over CDPD without being optimized. These factors have delayed implementation of CDPD.

Links:

The following URLs may be helpful in determining what specific things you need to purchase or do in order to run wireless credit card transactions:

http://www.nokiausa.com
http://www.motorola.com
http://www.ericsson.com

Trends:

Software solutions such as the Nokia Data Suite and Motorola Truesync software are beginning to be phased out. These software products run as programs on the user's computer to make the computer "think" the cell phone is a modem. Much of the functionality found in this kind of software is being put into the newer cellular phones themselves. In addition, data cables that connect the personal computer to the cellular phone are often being replaced by infrared connectivity.

Operating Systems:

Almost all of the software solutions from Nokia, Motorola, and Ericsson run under Windows 95/98 and Windows NT. Many, however, have not been enabled to run under Windows 2000 or Windows Millennium Edition.

Speed:

Expect data transfer speeds of about 9.6 KBPS. These speeds may rise to as high as 28.8 KBPS in the near future.

What you need:

- A personal computer running Windows 98, NT, or 2000. Some software connectivity products don't run with Windows 2000 or Windows Millennium Edition yet.
- **PC**Charge version 3.5 or higher.
- A digital cell phone that the manufacturer or reseller deems to be data capable.
- Probably a digital phone modem software driver. Most software for older cell phones can be obtained from a reseller of the original cell phone. Some of the newer phones have drivers that can be downloaded from the Internet free of charge, and some cell phones need an additional modem installed in the computer or on the base of the cell phone instead of software.
- A data cable or some way of allowing the computer to communicate with the cell. The cable can be obtained from a certified reseller of the original cell phone manufacturer. Some cellular phones communicate with the computer by infrared light and require no cable at all.
- One available serial port on the computer

- A card merchant account with an Internet-capable credit card processor (Ex: Nova, VisaNet, FTMS, etc.).
- An ISP (Internet Service Provider) account. (Ex: AOL, Mindspring, Earthlink, Netzero, etc.)
- Data service from your cellular carrier. Data services cost about $5.00 to $10.00 per month. This is important as cell phone resellers and manufacturers complain that they receive many technical support calls from customers trying to access the Internet who have not had data services enabled on their phone.

How to Set Up Software Drivers On Your Computer

(Please remember that these are general instructions and that specific drivers may vary.)

Setup on Windows 98, NT, and Windows 2000:

1. Setup **PC**Charge and configure the connection to your processor as TCP/IP.
2. Install the digital phone modem driver software on your computer.
3. Connect the digital phone to your computer via the data cable if you are not using infrared connectivity.
4. On the computer, select **Start**, then **Settings**, then **Dial-Up Networking** (Network and Dial-Up Connections on Windows 2000). Right-click on the connection for your ISP account, select **Properties**, and under **Connect Using**, select the modem that represents your cell phone.
5. Open Internet Explorer and select the **Tools** drop-down menu. Next, select **Internet Options**.
6. Select the **Connections** tab, and highlight the ISP account to be used for running transactions.
7. Select the **Always dial my default connection** radio button option.
8. Click the **Settings** button. Then enter your user name and password if applicable.
9. Click the **Properties** button, and ensure that the Connection to the ISP is configured to use the digital cell phone modem, and click the **OK** button.
10. Click the **Advanced** button. Select the **Disconnect if idle for __ minutes** option, and select the lowest number available (usually 3-5 minutes on Windows 98 and 1-2 minutes on Windows 2000). Then click the **OK** button.
11. Click the **OK** button on the settings screen; then the **Apply** button (if allowed) followed by the **OK** on the Internet Options screen.
12. Now connect to your ISP using the same procedure you normally would. This time, however, it should use your cell phone to connect.
13. Try pulling up a web page (Ex: http://www.pccharge.com)
14. If you cannot access a site, go to the **Troubleshooting** section below.
15. Use **PC**Charge to process a transaction.

Troubleshooting

- Make sure you are logging into Windows with the same user name that was used when you set up the software. If you hit cancel at the Windows log in screen you will be logged into Windows as an anonymous user, and you will not have access to the previously setup configuration.
- Check the cell phone cable and make sure it is connected.
- Make sure the customer is able to connect to their ISP without using **PC**Charge. Once they log onto the Internet make sure that they can pull up a browser and a web page.

Known PCCharge-compatible wireless phones

We selected Nokia, Motorola, and Ericsson to look at because of their current popularity and because of limited resources and time to investigate all the options available. Other cell phone brands probably offer similar functionality. Much of the discussion below discusses series of Nokia phones, for example the 5100 and 6100 series phones below. Within a series of data capable phones, not all may be data capable. If you are uncertain, check the vendor's web site or call the cell phone reseller to verify.

Nokia

Nokia's Data Suite 3.0 is a software suite that enables older **5100 and 6100 series phones** to act as computer modems among other things. In addition to the software, you will need to purchase the DAU-9P data cable. This is a serial data cable link between your phone and computer. The Data Suite works with selected Nokia 5100, and 6100 series phones. These phones are sold by Cingular, Powertel, VoiceStream, Conestoga, EinsteinPCS, Iowa Wireless, and Unicel Wireless. To run Nokia Data Suite on Windows 2000, you'll need to download and install the 3.0a patch the Nokia web site. Data Suite will run on GSM-1900 networks only.

Nokia 2100 series phones support sending and receiving data via an optional data adapter that connects to the base of the phone. You will need to contact your dealer for further details. Many of the 2100 series phones do not support the data card adapter.

The Nokia 7100 series phones have built in data communications plus an infrared port. You can connect your phone and computer via the DLR-3 data cable or use the infrared connection if your computer has one. The 7100 series phones support GSM data transfer speed up to 14.4 kbps. To enable the 7100 series phones for data transfer, you will need to purchase Nokia's Fonesync software which runs with Windows 95/98, Windows NT, and Windows 200**0.** We haven't tested it with Windows Millennium Edition.

The Nokia 8290 is the only 8200 series phone that can communicate with your computer. It communicates via infrared signals only. You can download the required PC Suite software driver from the Nokia web site free of charge. Go to information about the phone, and select PC Suite. To install and run PC Suite for Nokia 8800 phones, you will need to have a computer with infrared capability running Windows 95/98. The 8290 is sold by Cingular Wireless, NPI Wireless, VoiceStream Wireless, Powertel, and others.

The Nokia 8890 is the only 8800 series phone that can communicate with your computer. It also communicates via infrared signals only. You can download the required PC Suite software driver from the Nokia web site free of charge. Go to information about the phone, and select PC Suite. To install and run PC Suite for Nokia 8800 phones, you will need to have a computer with infrared capability running Windows 95/98. The 8890 is sold by Cingular Wireless, VoiceStream Wireless, Powertel,l and others

Nokia 9000 series phones connect to your computer via infrared or a DLR-1 data cable. You must install the Nserver Connectivity Software which is sold with the phone. The Nserver Connectivity Software runs on Windows 3.1, Windows 95, and Windows NT.

Motorola:

The Motorola Data Connectivity Kit with TrueSync software is similar in functionality to Nokia's data cable with the Data Suite software. The Data Connectivity Kit cable connects the Motorola cell phone to your personal computer. This setup works with the following Motorola CDMA data capable phones. The following Motorola cell phones work with the Data Connectivity / Truesync solution:

Talkabout	Timeport	V. Series	StarTAC
T8060	P8060	V8060	ST7860
T8067	P8067	V8062	ST7860W
T8167	P8160	V8160	ST7867
	P8167	V8162	ST7867W
			ST7868
			ST7868W

Ericsson

Ericsson has over 90 models of phones, most of which can be enabled to act as a modem for your computer. An list of a few of their models is listed below. If the Ericsson phone you are interested in is not listed below, see the web site http://www.ericsson.com/consumers and select "Mobile Phone Gallery" to find the model of your choice and the necessary accessories to enable it to work as a modem. Several models of Ericsson phones are listed below:

Ericsson SH888 Dual Band Data Phone with built-in PC Card operates with Windows 95 / 98. Your network provider can assist with detailed instructions on enabling data access.

Ericsson DC23 Card (GSM Cellular Modem) for 337 models at 2400 baud, 318 and 388 models at 9600 baud. Your network provider can assist with detailed instructions on enabling data access.

Ericsson R380s: "s" is for synchronization. This model uses a DRS-10 cable to connect to the PC, and it is a combination personal digital assistant (PDA) and cell phone with handwriting translation software. Your network provider can assist with detailed instructions on enabling data access.

Ericsson A1228c: This model will browse the Internet but won't connect to a PC.

Ericsson AF738, AF778, AH210, AH220, AH230, AH237, AH238, AH310, AH600, AH618, AH620, AH628, AH630: These models have data capability and require data cable and AC28 mobile phone modem to operate. Your network provider can assist with detailed instructions on enabling data access.

Ericsson CA318: This model has data capability and requires the DC12 modem to connect. Your network provider can assist with detailed instructions on enabling data access.

Ericsson CA638: This model has data capability and requires Mobile Office DC 23v4 and a data cable to connect. Your network provider can assist with detailed instructions on enabling data access.

CA337 – requires a DA12 cable to connect. Your network provider can assist with detailed instructions on enabling data access.

Ericsson GC25 Cellular Data Cardphone: This is computer card rather than a cell phone. It requires a type III PCMCIA slot on your computer, and it operates with Windows 95 / 98. Your network provider can assist with detailed instructions on enabling data access.

Summary

The cellular phone market has many solutions for enabling **PC**Charge to wirelessly connect to the Internet to process credit cards. Most cell phone vendors provide solutions that consist of a data service that the vendor provides for a monthly fee, software which may or may not be free of charge, and some type of link (either cable or infrared) between the computer and the cell phone. Your best sources for determining which options you need to acquire in order to get started are your cellular service provider, cell phone resellers, and the manufacturers' web sites. You will probably want to test your coverage or check with your cellular service provider to determine coverage if you plan to use your wireless credit card solution in small towns or rural areas.