

EVOLVING SYSTEMS

White paper

An Overview of Wireless Number Portability



EVOLVING SYSTEMS

Publication Date: February 05

COPYRIGHT © 2005 EVOLVING SYSTEMS, INC.
ALL RIGHTS RESERVED

No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, magnetic, optical, chemical, manual or otherwise, without the prior written permission of Evolving Systems, Inc.

The Evolving Systems name is a registered trademark of Evolving Systems, Inc.
All other product identifiers are trademarks of their respective owners.

For more information on Evolving Systems' products visit www.evolving.com or contact one of our offices.

Americas

Evolving Systems, Inc.

9777 Mount Pyramid Court, Suite 100, Englewood, CO 80112

Telephone: 303 802 1000

Europe, Middle East & Africa

Evolving Systems Limited

One Angel Square, Torrens Street, London EC1V 1PL United Kingdom

Telephone: +44 20 7843 4000

Asia Pacific

Evolving Systems Limited

Level 26, Menara IMC, No.8 Jalan Sultan Ismail, 50250 Kuala Lumpur, Malaysia

Telephone +603 2039 4705

Contents

Contents	3
Overview	4
What is Wireless Number Portability?	5
WNP History	6
How to Port a Phone Number	7
Requesting to port a number	7
Verifying the ability to port	7
Porting options	7
Implementing the port	8
Cross-over period	8
E-911	8
Differences Between the Old and New Service Providers	10
Differences in feature offerings	10
Where the features actually reside	10
Re-use of handsets	10
Voice-mail	10
Handset features	11
Short Message Service	11
Email and Web access	11
Location based services	11
Porting previously disconnected phone numbers	11
Planning Your Port	13
Summary	14

Overview

This article provides an overview of Wireless Number Portability (WNP) for consumers who are interested in finding out about porting their wireless phone number from one service provider to another. Included is an overview of the porting process and steps that a consumer can take to ensure a smooth transition.

What is Wireless Number Portability?

Given the choice, would you consider switching your wireless phone service to a different carrier if you could still keep the same phone number? If this sounds appealing, then according to recent studies you are in the 46 percent of mobile phone users who say they will switch wireless service providers in the first year that Wireless Number Portability (WNP) is available. Currently, about 1/3 (33%) of all wireless consumers switch their service providers each year. When WNP becomes available on November 24th, 2003, it is expected that most people will elect to retain the same phone number when they switch providers. In the past, many people have not switched wireless service providers simply because they did not want to change phone numbers. When WNP becomes available, it is expected that those people will decide to switch providers because they will be able to keep their phone number.

Keeping the same phone number when switching wireless providers offers big advantages to both individuals and businesses. WNP gives consumers the freedom to choose a new service provider without the inconvenience associated with notifying all of their contacts about a phone number change. Many people have had their phone number for a long time and their number may be memorized or recorded by friends, family or business associates.

Business related wireless phone numbers are often listed on business cards, stationary, advertising, or other key customer communications. Not only is it costly and inconvenient to change the number on all of these items, lost communications can have a negative impact on the business. The freedom provided by WNP allows consumers to select their service provider based on competitive factors such as quality of service, special features, reliability and cost. For the wireless consumer this is a welcome change.

WNP History

The Telecommunications Act of 1996 was passed by Congress to encourage competition among telephone service providers, increase communications options available to consumers and create a competitive environment that would encourage favorable pricing. A key component of the Telecommunications Act of 1996 required carriers to allow consumers to change service providers while retaining their original phone number. This is known as Number Portability. The Federal Communications Commission (FCC) is the government regulatory agency chartered with implementing the provisions of telecommunications related legislation. The FCC mandated staggered deployment time frames for Number Portability. Initial wireline portability capability occurred on December 31, 1998. As of mid 2003, approximately 54 million wireline numbers in the United States have been ported between service providers, and the number of consumers who port their phone numbers has been steadily increasing each month.

Number Portability for the wireless industry was initially scheduled for June 30, 1999. Responding to issues raised by wireless providers, the FCC postponed the implementation date to March 31, 2000. The FCC later postponed the wireless implementation date to November 21, 2002 and finally to November 24, 2003. At this time, the FCC is holding firm on the current mandated date, despite lobbying for yet more forbearance by several industry groups and service providers. The FCC mandate requires all licensed carriers in the top 100 Metropolitan Areas in the United States to provide the capability on November 24, 2003 for consumers to port phone numbers between wireless carriers and between wireless and wireline carriers.

The time-frame requirement for porting a number between carriers differs between wireline and wireless numbers. While wireline service connections generally require dispatching a field technician to reconfigure telephone switches, wireless service activations are accomplished entirely through software updates, often while a consumer waits at a store or kiosk. Due to these fundamental differences in the activation processes and consumer expectations, service providers are allowed several days for the scheduling of wireline number ports, while wireless number porting must be completed within 2.5 hours. Because of this short time frame, wireless carriers have collaborated to create a number porting process among the carriers that streamlines the operation for quick completion. This has required the development of additional mechanisms and interfaces over and above those that are required for wireline number portability.

How to Port a Phone Number

Requesting to port a number

When a consumer contacts a new service provider and makes a request for phone service, the consumer can indicate that they are switching phone service from a current provider and that they want to keep the same telephone number. Transferring the phone number between the service providers requires a string of complex events and coordination to take place between the old service provider, the new service provider, the centralized North American Number Portability Administration Center, and all regional or long-distance carriers that need to route calls to that phone number.

Requesting the port is as simple as telling the new service provider that you want to keep your same phone number, and then providing basic customer information that allows the old service provider to verify that you are their customer assigned to that phone number. You will be asked to provide information such as the name that appears on the old account, the old account number, and the address associated with the old account. The new service provider will need the identity and billing information normally required to set up a new account.

Verifying the ability to port

The new and old service providers involved in the number port first communicate to perform an “approval process” on the customer information and the capability to port the telephone number. Although the wireless porting standard requires the entire porting process to be completed in 2.5 hours, only the first 30 minutes of that time is allocated to the approval phase. If all of the information is correct, the old service provider must allow the port to occur. However, if some of the information in the port request does not match their information for the customer, then the old service provider can indicate that there is a complication, and that the information needs to be corrected or the discrepancy resolved before the port can occur.

Porting options

Starting on November 24th, 2003, in addition to wireline to wireline ports, it will be possible to port a phone number between the following types of carriers:

- Wireless to wireless
- Wireline to wireless
- Wireless to wireline

Wireline carriers include the former Regional Bell Operating Companies (RBOCs) that were created from the breakup of the national phone system in the 1990s, such as SBC, Verizon and Qwest. Wireline carriers also include any of the new Competitive Local Exchange Carriers (CLECs) that provide service to the customer over any type of wired connection, such as McLeod, Time Warner or any of the cable operators which also provide phone service. Wireless carriers include all carriers that provide phone service in the top 100 Metropolitan areas, regardless of the radio technology used by that carrier. Common radio technologies include Analog, TDMA, CDMA and GSM. Note that porting a number between wireless carriers only means that the same phone number can be used with the new provider. It does not mean that

the same handset can be used, as different providers often use different radio technologies that may not be supported by the old handset.

There are also certain circumstances where it will not be possible to port a phone number between providers. Sometimes it is not possible to port a phone number across to a service provider that operates in a different "rate center." A few years ago, a rate center was commonly associated with a local calling area, or an area within which you could call without having to access a long distance service. More recently, states have been working with local carriers to consolidate these rate centers to simplify the regulatory environment. As this consolidation occurs, the likelihood of not being able to port because of different rate centers will decline.

Finally, the FCC mandate is for wireless number portability to be implemented in the top 100 metropolitan areas, which means that some rural areas or smaller towns may not support number portability on November 24th. However, after November 24th, the service provider must be able to support number portability within six months in any area where they have received a request to port a telephone number. So it is likely that many additional smaller towns and rural areas will have number portability by mid 2004.

Implementing the port

After the port has been approved, the new and old service providers electronically communicate with the National Number Portability Administration Center (NPAC) to synchronize when the calls will stop being routed to the old service provider and will start being routed to the new service provider. The NPAC also sends out the new routing information to all service providers that may need to route a call to the phone number. This is generally all of the local service providers in the area where the new service provider resides, all long-distance service providers, and all wireless service providers. The service providers have guidelines for how long they can take to set up their telephone network to route the calls to the new provider. However, the change in call routing can occur any time within the maximum time period specified by the FCC.

Cross-over period

After the port has been communicated between the old and new service providers, the NPAC broadcasts a message to all service providers with the new call routing information. Each service provider is then responsible for updating their network to route the calls to the new phone. The reconfiguration of the network equipment by all of the service providers does not occur at exactly the same time. This leads to a crossover period, with the possibility that calls to the phone number may be sent to the old phone or to the new phone while the phone network is being reconfigured. For example, a long distance call may go to the new phone, while a call from a different location or from a different network may get delivered to the old phone. For wireless to wireless number ports, the cross over period should last no more than a few hours under typical conditions. It is important to note that the cross-over period only has the potential to impact incoming calls. Once the new phone has been set up to initiate a call it will still be able to make outgoing calls during the cross-over period.

E-911

For an emergency 911 call originating from a wireless phone, the FCC has mandated that wireless carriers must be able to determine the location of the handset within $\frac{1}{4}$ of a mile. This relatively new capability has proved invaluable in situations where the caller cannot communicate his or her location to the emergency agency that handles the E-911 call. During

the cross-over period, there is a chance that the location information may not be available to the E-911 call handler. Part of the critical handling of these emergency situations involves the ability of the E-911 operator to be able to return a call to the originator in the event that the call is disconnected, or additional information is necessary. During the crossover period of a number port, there is a chance that a customer can place a 911 call, but that the E-911 operator will be on a different network and unable to return the call. Consumers should be aware of this, and should attempt to not use recently ported wireless phones for E- 911 calls, or should inform the E-911 call handler that they are using a wireless phone that recently had the number ported.

Differences Between the Old and New Service Providers

When a phone number is ported from one service provider to a different provider, there will be differences in the features and behaviors experienced by the consumer. It is recommended that the consumer research and understand these differences before they make the decision to switch service providers.

Differences in feature offerings

The packages and features offered by the old and new service providers will most likely be different. This is one of the key reasons why consumers wish to switch service providers. It is important that the consumer closely examines and understands these features and packages before deciding to switch providers. The consumer should not assume that a feature provided by the old carrier would automatically be provided by the new carrier in the same way or with the same pricing structure.

Where the features actually reside

Some features and their corresponding behaviors experienced by the consumer exist in the handset, while others exist in the network equipment. For many of these features it may be obvious where they reside. For other features it may be harder to determine if they are provided by the phone or the network. For some service providers the feature may reside in one place, and it may reside in a different place for a different service provider. For example, voice mail is implemented in the network equipment while phone books or contact lists are commonly stored in the handset. Specialized ring tones may be implemented in either location, or with an interaction between the network and data that is stored in the handset. The important thing for the consumer to understand is that many of these features may change when they switch providers, even if they retain the same handset.

Re-use of handsets

Many, if not most, of the wireless number ports will require that the consumer obtain a new handset from the new service provider. This is because the various wireless service providers use different radio technologies, or have the handset and network configured differently. Even if the two service providers advertise that they use the same radio technology, it still may not be possible to use the old handset with the new service provider. In making the decision to port their phone number, consumers should factor in any costs that may be associated with purchasing a new handset. Fortunately, due to the rapid improvement in mobile phone handsets and aggressive handset pricing from service providers, it will often be possible for the consumer to get a new, better handset for a relatively modest investment.

Voice-mail

Voice mail is implemented in network elements of a service provider. Porting to a new service provider will cause a switch to a different voice mail system. During the crossover phase of the port, there may be a period where some calls are going to the voice mail of the old service provider, even while other calls are routed to the new phone.

Handset features

If the consumer has the option of retaining their original phone, then most handset features should remain the same, including the phone book stored in the handset. However, some handset features interact with back office systems provided by the service provider, and might not work the same way after the port.

Short Message Service

Short message service, or text messaging, is the ability to send a few lines of text from or to a mobile phone. Some types of phones (such as GSM phones) also have the ability to send SMS messages directly to other phones. Depending upon the phone technology and the service providers' back office systems, the SMS messaging may or may not port between the service providers. Routing an SMS message to a phone is very similar to routing a phone call; during the crossover period text messages may be routed to either the old or new phones.

Many carriers have the capability to have an email message automatically converted into an SMS message and sent to a phone. For example, you could send an email to 1112223333@serviceprovider.com and that would be converted to an SMS message and sent to (111) 222-3333. When doing the port, the consumer will get a new email address from the new service provider for this function. The consumer will need to update contacts and information providers with the new email address.

Email and Web access

Many service providers now offer email and Web browsing on the newer handsets. If the consumer is simply accessing the Web, or accessing email from a third party Internet Service Provider (ISP), then the consumer will most likely be able to perform the same activities with the new service provider. If the old service provider is also offering the email service and associated mailbox, then the consumer will likely need to get a new email address from the new mobile service provider or a third party ISP.

Location based services

Many wireless service providers have recently started offering advanced location based services. These services leverage the location identification capabilities developed for E-911. An example might be a traffic alert that is delivered to a handset whenever the handset is within 10 miles of an incident. The location service uses features in the handset and within the network. This offering is dependent upon the service provider, and may or may not be available when a customer ports his or her mobile phone number to a new service provider.

Porting previously disconnected phone numbers

Many service providers will put a hold on a phone number after a customer cancels the service associated with that number. During the hold period, the service provider does not assign the phone number to a different customer. The reasons for doing this include:

- Preventing a new customer from being given a phone number that is still getting calls for a prior owner
- Enabling a customer to change his or her mind and re-establish service

- Allowing the service provider to have an automated message associated with the phone number that states the number has been disconnected or changed to a different number.

Consumers should be aware that they lose control of the number when they cancel their service, and that they will not be able to port a number they have previously cancelled.

Planning Your Port

Some basic planning and preparation can help make the number port go smoothly. Some things a consumer should do are:

- Determine if it is possible to port your wireless phone number to your desired service provider. In some rare cases, it may not be possible to port the number due to technical issues, or lack of portability support by the new service provider.
- Obtain the customer support phone numbers for both service providers. Many people are accustomed to dialing a special code on the mobile phone to access customer service. During the porting process, this may not work, and it may be necessary to call the wireless carrier's customer service from a wireline phone.
- Leave a voicemail message on your old phone box that states you are switching carriers, and messages left there may not be received. Give callers an alternate way to contact you, such as a different phone number or an email address.
- Try the phone number access methods for accessing your voice mail from a different phone. It's best to understand this for both the old and new service providers.
- If you are expecting important calls during the transition:
 - Warn callers that your wireless phone may not be accessible for several hours
 - Provide an alternate access number (home or work number)
 - Consider doing the port at a different time
- Make sure the correct information is provided to the new service provider. Incorrect information can cause the port to be refused by the old service provider.
- Give the new service provider a good contact phone number, so they can reach you to resolve any discrepancies. If you are porting a wireless phone number, the old phone will still work during the first part of the porting process. However, alternative contact information may be necessary if issues occur mid-stream in the porting process.

Summary

The ability to retain the same phone number when switching wireline or wireless telephone service providers will be beneficial to consumers. However, it is important to understand that many of the features or services such as voice mail or text messaging are not “in the phone,” but rather provided by the service provider and may differ between providers. The vast majority of the number ports will occur smoothly and quickly. However, delays or complications may occasionally occur. Some advance planning and simple preparation can reduce complications and improve the overall porting experience.

With Wireless Number Portability, consumers will be free to pick the service provider of their choice without having to address all of the issues associated with changing phone numbers.

About Evolving Systems

Evolving Systems Inc. (NASDAQ-EVOL) is a provider of software and services to more than 50 network operators in 37 countries worldwide. Its portfolio includes market-leading solutions for activation, mediation & assurance and numbering solutions.. Founded in 1985, the Company has headquarters in Englewood, Colorado, with offices in the United States, United Kingdom, Germany, Italy, India and Malaysia. Further information at www.evolving.com