Can the PSTN be Shut Down?

Gary Audin, Delphi, Inc.

Can the PSTN be Shutdown?

VoIP phone services keep growing. The cable companies, for example Comcast, are competing very effectively against the traditional legacy carriers for voice services. Pay phones keep disappearing. Mobile voice call volume keeps growing.

We will eventually see the PSTN retire and POTS disappear. Wireless and broadband connections proliferate while the old copper pair connections offered by the Telcos are turned off, as many as 700,000 lines per month. The trend is all downhill for the PSTN and its legacy operation. This however does not mean the PSTN will close soon or without any challenges.

This discussion was prompted by a December 21, 2009 document "Comments-NBP Public Notice #25, Comments of AT&T Inc. on the Transition from the Legacy Circuit-Switched Network to Broadband" submitted to the FCC. The term used is to "sunset" the PSTN. What AT&T means is to close down the PSTN and get the approval of the FCC. AT&T wants to retire the PSTN and POTS so they can invest in broadband deployment. Part of their request is to terminate the PSTN regulatory infrastructure and remove them as the Carrier-of-Last-Resort (COLR), in other words, eliminating existing regulation and policies. Terminating the COLR policies may be the real goal of AT&T with the broadband issue used as the driver for public consumption.

This article speculates about the challenges and provides some insight to the barriers that need to be overcome. It also speculates as to the motives of AT&T and those who will be affected by the PSTN retirement.

What Does AT&T Want?

The AT&T comments submitted to the FCC contain a number of requests and recommendations that AT&T sees as necessary for the migration from a circuit switched to packet switched (IP) environment. AT&T sees the eventual demise of the circuit switched network. Here are several of the issues raised by AT&T.

- AT&T agrees with the Congress and their goal to expand broadband service to 100% of the US.
- AT&T says that maintaining and investing in the PSTN diverts funds from their expansion of broadband services.
- AT&T wants a set date for the termination of the PSTN.
- Towards this end, AT&T wants the COLR policies for the PSTN and POTS to be eliminated. This would allow AT&T to drop services where they are not profitable as well as raise the rates for those remaining on the PSTN.
- AT&T expects the US carriers to provide voice services by wireless networks and/or VoIP services, replacing the PSTN but with few or limitations/restrictions as found with the PSTN.

One issue not covered in the AT&T comments is the concept of Carrier of Last Resort for broadband and wireless services. Without the COLR for broadband and wireless, there is still no guarantee that all locations in the US will have access to broadband and wireless communications. Indeed if they have access, will it be affordable?

Although AT&T has taken the lead on these issues, the end result will affect federal and state policies and regulations for all carriers. All the PSTN carriers are facing most of the same issues. Others carriers may join AT&T in this effort. Verizon is selling off its landline networks especially in rural areas of the U.S. It is also likely the consumer groups and some enterprises will resist this movement or a least try to have some exemptions such as for rural areas and low income communities.

What are the PSTN and POTS?

These are the most important questions because the definition of the Public Switched Telephone Network (PSTN) and Plain Old Telephone Service (POTS) will bound the results for their elimination. If we look at the components of the PSTN, there are many:

- C5 and C4 circuit switches
- Trunks connecting the switches
- Local loop access lines, the copper pairs
- Network operations centers
- The buildings that house the switches and terminate the trunks and loops
- Cable rights-of-way
- The legacy support staff

POTS is the circuit switched service that is implemented by the PSTN. The service is designed and billed with voice, not data, communications as the primary service. We all know that we can get modem transmission over the PSTN, but that is of secondary importance and is continually decreasing in favor of broadband transmission.

AT&T does not provide information about what components are to be retired in their document. Verizon, Qwest and many smaller carriers make up the PSTN, so the discussion must include them as well. There will be a range of comments on the value and disposal of the PSTN components in the comments expected to be delivered to the FCC.

What is a Carrier of Last Resort (COLR)?

Historically, the US has committed to ensure that all citizens have access to a local wireline telephone exchange for POTS. States have helped achieve this commitment by enacting their COLR policies. The policies can be enacted by state legislatures and/or state commissions. The COLR policies impose a financial burden on the Incumbent Local Exchange Carriers (ILEC). The result of these COLR policies is the delivery of a network that provides nearly all residents the opportunity to subscribe to a reliable and high quality wired voice service without any discriminatory terms. The federal and state regulators assigned to the COLRs carrier to carrier responsibilities that produced a fully interconnected network so that any caller could connect to any other caller.

As the COLR, AT&T has to provide the PSTN services in its coverage areas. A COLR is any telecommunications carrier that has to provide service to any party that has the ability to pay. The term is codified in the Federal Communications ACT of 1996, 47 U.S.C. 214 (e). A paper published by the National Regulatory Research Institute (NRRI), “Carriers of Last Resort, Updating a Traditional Doctrine” can be found at http://www.nrri.org/pubs/telecommunications/COLR_july09-10.pdf. The NRRI argues for the continuation of COLR policies. The NRRI paper also notes that with technological and market changes that the COLR policies in most states have not kept up and need modification. An AT&T PowerPoint presentation from 2008 on this subject “Confronting Tough Questions About Carriers of Last Resort” can be found at http://www.narucmeetings.org/Presentations/Confronting%20Tough%20Questions%20About%20Carriers%20of%20Last%20Resort.ppt#280,7,Current State Developments.

COLRs do not necessarily make a profit when providing telephone network access. This is compensated by allowing a monopoly franchise within the state. The state commission sets the rates so that a reasonable return on investment was achieved for the COLR. The states also have the jurisdiction to allow or prevent a COLR from abandoning the franchise or selling the network investment to another carrier.

The rate designs were created to allow large financial contributions to the common costs for certain classes of customer; businesses paid more than residents for the same service. The federal policies, from the Communications Act of 1996, authorized the FCC to pay universal service support (Universal Service Fund) to multiple carriers including non-COLRs. The universal service support was designed to provide additional revenue for the COLR so that it could provide POTS.

If there is no COLR, should there be a Universal Service Fund (USF)? The USF is primarily used to support the COLR where the delivery of voice service is not profitable. The USF is also used to improve Internet access and educational communications. Will there then be a USF charges for wireless and broadband services? Without the USF, most wireline bills will decrease by over 12%, a savings - but a loss for those supported by the USF. Should there be a USF to extend broadband and wireless access? I don't have a conclusion but I think the USF question has to be answered in concert with the closure of the PSTN and the change or termination of the COLR policies.

What is Broadband?

The FCC definition of broadband can found at "What's Broadband" http://www.fcc.gov/cgb/broadband.html. Today, broadband is any Internet service that has a speed of at least 200kbps in one direction. This definition may however be changed in the future. The FCC has asked for comments on this definition. Many of the initial comments recommend raising the defined minimum broadband speed to at least 768kbps.

There are many in the industry that believe that even 768kbps is too low a speed to define broadband because most of the experiences with video, music and picture files really need higher speed access. If the broadband speed definition is raised to 768kbps, then 2G wirelesses is too slow and many 3G connections would probably not meet the broadband definition. So if AT&T is pushing broadband as the alternative to the PSTN, then the AT&T wireless networks could be too slow. Verizon and Sprint would be in the same condition if the minimum broadband speed is raised.

What Will be Retired or Not?

None of what is in this section is a fact, but opinion based on what I think the business as well technical issues that will arise. I am sure there will be a large number of commenting organizations, some for the PSTN closure, many against it and a few agreeing with AT&T with caveats.

- C5 and C4 circuit switches – These switches have been capitalized with write off periods that can be as long as 20 years. Their retirement can coincide with their capital completion dates. However, some may be extended until replacement technologies can be installed. These legacy switches can be replaced by softswitches supporting IP traffic of multiple media including voice transmissions. Since most of the world is also moving to IP based services, it is unlikely there will a secondary market for these switches. Therefore the switches may have no after market value.
- Trunks connecting the switches – These are digital and independent of the media carried, voice, video, data… They are mostly fiber optic, not microwave, copper or coaxial cable. The fiber trunks do not need to change however the terminating equipment will need to be changed to eliminate the legacy methods (multiplexers) for bandwidth allocation from a channel based allocation. As with the switches, there will probably be little market for the terminating equipment.
- Local loop access lines, the copper pairs – The question here is who would want the copper pairs if they are replaced with fiber to the home or coaxial cable. My recent experience with a DSL failure demonstrated that my local carrier does not want to continue to maintain the copper pairs or to install new copper pairs. Will the copper be abandoned, probably not? Will it be removed for resale as copper metal to recyclers, possibly? If the copper pairs are abandoned, does that mean I will no longer have DSL service? An open question.
- Network Operations Centers (NOC) – These centers already support IP services. The portion dedicated to the PSTN will be retired. The NOC legacy equipment will probably not have much resale value.
- The buildings that house the switches and terminate the trunks and loops – The buildings can be reused for broadband services or sold on the market as regular real estate.
- The rights-of-way now owned by the PSTN carriers would be kept for the support of fiber transmission. There is too much value in the rights-of-way to abandon them. The copper cables may however be abandoned in favor of fiber connections. Some rights-of-way may be abandoned in areas that the AT&T and other ILECs wish to exit if the COLR policies are rescinded.
- The legacy support staff – This staff is aging and retiring anyway. Some may be retrained for IP based services, but they may be too expensive to continue as support staff. It is most likely that the carriers will not replace the retiring staff and may accelerate their retirement to reduce costs. My concern is that as

the legacy experienced staff disappears, then those remaining legacy services that have not been retired will experience every decreasing quality and service support.

What's the Value of the PSTN?

The PSTN, with all of the carriers included has been and continues to be a huge investment. It also costs a great deal to maintain. AT&T sees the continued abandonment of customers from the wired PSTN and wired POTS. There is a cost to maintaining the infrastructure that is basically independent of the size of the customer base. This fixed cost, when covered by fewer customers, means less profit for AT&T or AT&T has to raise their rates. The latter is generally not acceptable to the PUCs. The costs of wireless services also compete with the wired network services. The restrictions on wired services charges will eventually make wired services and POTS unprofitable.

Before the announcement by AT&T, the PSTN infrastructure was worth billions. As an investor, I would perceive the announcement by AT&T as reducing the value of that infrastructure. This will make it harder for AT&T or any other carrier to sell the assets. The market value has already decreased even though there is still revenue and profit to be made offering POTS. I think the announcement will make it harder to sell off these assets or their may be a fire sale.

The impact on smaller ILECs and CLECs is worth considering. The smaller ILECs and CLECs will be pushed faster to offer broadband and VoIP services. They will also be approached to acquire the assets of the large ILECs like AT&T. Verizon is already well down this path. The issues here are:

1. Can the smaller ILECs absorb the debt required for the acquisition?
2. Will the PUC/PSC approve the acquisition?
3. Will the handover to the ILEC be successful with little or no customer impact?
4. Will the customers remain loyal to the new provider or abandon the services for other providers.

Who else may attempt to buy the PSTN assets is an open question. In the past, the federal government has resisted foreign acquisition of the assets of carriers. Therefore it is very likely that only domestic companies will be asset acquisition candidates. Limiting the possible acquiring companies will further decrease the value of the assets because there will less competition.

The stock value of the PSTN carriers may go up with the sale of the PSTN assets and the elimination of the burden to maintain the PSTN. If however, the PSTN carriers have difficulty selling the assets or if the FCC and PUCs resist the sale, then the stock value of AT&T and other will decrease. If AT&T continues to hold the PSTN assets, then it may be harder for AT&T and others to acquire capital for expanding their other more profitable broadband and wireless operations.

National Security

Federal, state and local governments depend on the PSTN. The Department of Defense (DoD) and the Department of Homeland Security (DHS) will be very interested in any degradation, loss of coverage or closure of PSTN services. Since the PSTN has been and continues to be part of the plans of these agencies, I expect they will have to evaluate the ramifications posed by the PSTN closure. I also expect that there will be long drawn out process of evaluation before any decisions are made.

The replacement of the PSTN with broadband access will affect many of the DoD and DHS systems as well as the government communications contracts that are in place. These contracts assume there is a PSTN. Can the government agencies cancel the contracts in favor of the broadband solution? At what cost? How will the migration occur? What about the networks used by these agencies that are beyond the US border? Will there have to be two distinctly different networks, broadband in the US and international PSTN for the rest of the world? These are complicated issues that will make to closure of the PSTN for these agencies a primary problem that most do not want to face soon.

Wireless Networks and the PSTN

The multiple wireless networks in the US provide varying service in many geographic locations but they are not ubiquitous. There are many locations that are not served. Some areas where there is low revenue are still working over 1G technology. Look at the Verizon and AT&T maps you have seen in television adds about the national 3G coverage. AT&T has considerable empty space. Even though Verizon's coverage is broader, there are still many empty spaces on their map. There is no COLR for wireless, therefore there is no guarantee that all locations in the US will be served. Without a COLR for wireless, the wireless carriers will not serve those customers that produce low revenue or the wireless carriers will have to charge premium rates to serve these customers.

If AT&T is including wireless networks in their broadband coverage, then if the definition of broadband speed is increased to 768kbps as some suggest, most of the time the 2G, 2.5G and sometimes the 3G services cannot be considered to be broadband. These services can all carry voice calls successfully in their territories. VoIP over wireless can operate without taxing the bandwidth of the wireless networks. Voice call quality over wireless VoIP can be a problem because of the long latency of wireless, 150ms to 200ms and the increased packet loss. Latency will be reduced as the wireless carriers move to 4G and LTE technologies. The packet loss will still be a problem. Therefore it is unlikely that wireless VoIP will dominate and cause the wireline voice services to be terminated.

Independent of which method is used for wireless voice communications, wireless voice or VoIP, the wireless carriers depend heavily on the PSTN for interconnection. I asked Mike Finneran, a NoJitter blogger who focuses on wireless technologies and issues, about the use of the PSTN for wireless interconnection. He said "The wireless carriers depend on the PSTN as much as the VoIP providers do. Their peering connections are virtually all through the PSTN- they don't talk to each other much less provide direct trunking- and why would they? With regard to the overall network, I can't remember seeing a statistic that identifies the percentage or wireless calls to/from wired lines, but I'm guessing it's in the 50% range. Wireless as a carrier of last resort? That's like buying Tequila shots for the designated driver!!!"

Mike also pointed out that the power backup for cell sites is for hours, not days. When a cell tower losses power, the carrier can drive a mobile backup generator to that site. But if many sites lose power as in Katrina, the carriers do not have enough backup generators for a large number of power failed sites. The wireless carrier's MSC does have backup generators, but these may be useless if the towers' power fails. Will the wireless carriers invest in improving their power backup to match that of the PSTN? Only if required. Think about 911 calls if there is not PSTN and the cell towers lose power.

What if the PSTN no longer exists? The wireless carriers would have to develop a interconnect solution or peering arrangements such as operate in the Internet and/or create a backbone network for interconnection, an investment in either case. To cover the increased traffic, wireless carriers can add more towers with smaller cell footprints to handle the increased traffic. So closing the PSTN will have an economic impact on the wireless carriers and not all the freed up funds (by closing the PSTN) will be available for broadband investment.

Assume that the wired voice traffic mostly migrates to the wireless world. Will the wireless carriers have the capacity to handle the increased voice traffic? I don't know. Some of the savings accrued from closing the PSTN may be diverted to expanding the wireless infrastructure, for example adding more cell towers, and not to the expansion of broadband services.

The State PSCs and PUCs

The FCC has jurisdiction over interstate PSTN services and carriers. Each of the 50 states has a Public Utilities Commission (PUC) or Public Services Commission (PSC) that regulates their state's public utilities. PUC and PSC are often used interchangeably. For telecommunications, the PUCs regulate incumbent local exchange carriers (ILECs) such as AT&T and Verizon. They also certify competitive local exchange carriers (CLECs) and register inter-exchange carriers (IXCs) also AT&T and Verizon. The PUCs issue and enforce rules relative to telecommunications competition, oversee emergency services (911, E911), administer the universal service fund (USF), and monitor service quality. Cable services are also covered by the PUCs. Every state has urban and suburban areas that have broadband access and PSTN services. Rural areas may have little or no broadband or

wireless services. In this latter case, the Universal Service Fund helps offset the cost of PSTN support for the ILECs.

The PUCs have the regulatory authority to allow or bar carriers from offering service within their state. If we assume that AT&T and other carriers decided to sell their infrastructure and service offerings to another carrier, then the PUC has the right to review and approve or disallow such a sale. Verizon sold its local infrastructure, with PUC approval, to Fairpoint in Maine, New Hampshire and Vermont. This has not worked well. A similar sale of Verizon infrastructure to Frontier in West Virginia has encountered resistance because of the Fairpoint failure to successfully integrate the Verizon infrastructure in New England. So the PUC could stop AT&T from selling its local assets if the PUC deemed such a sale would not benefit the states citizens, local governments, educational institutions and businesses.

States sometimes take on issues that the federal government can not seem to resolve. Several states attorney generals have cooperated to address issues not resolved by the federal government. These joint state actions have included anti-trust cases and the tobacco industry. Is quite possible that if the FCC and Congress cannot deal with the retiring of the PSTN, then states may take on the issue and resolve it themselves. So AT&T cannot depend on the FCC alone to work the issue of the PSTN closure.

The Capitalization Cycle

The ILECS have been writing off the investment in the PSTN infrastructure. The write off is taken over a long period of time to keep the POTS rates low. The write off period can be as long as 20 years. Assuming that the investment in the PSTN components did not all occur in the same year, then the PSTN components will reach their retirement date at different times This means that the PSTN components will be financially maturing over years, not simultaneously.

Until the PSTN components mature and finish their capitalization they will have value on the AT&T books. If AT&T can sell the components for their booked value, there will be no loss. However, would you buy these components at that value if you thought that they were worth less than the booked value? Not likely. Therefore AT&T can look forward to absorbing some financial losses in the sale of the PSTN components. The acquiring carriers would benefit by gaining the PSTN components at a discount. The resulting financial losses for AT&T could have negative impact on their investment in broadband service expansion.

Another factor in capitalization is the rapid development and turnover of the IP/packet technologies. The write off periods will be far shorter, possibly five years. The shorter the write off period, the higher the rates paid by subscribers. Even if the basic rates are affordable, the service providers will work on methods to differentiate their services so they can charge add-on fees.

Software is becoming the majority expense, not the hardware. Software is commonly expensed in the year of purchase or license acquisition. Multi-year software subscription fees are paid in the first year of deployment. The software write off may not be absorbable in one year; therefore the addition of new IP supporting components will be spread over several years. That means that the PSTN will have to be retired in phases even if the regulators agree to a PSTN termination date.

What About DSL?

DSL services over the copper local loop; will they continue after the sell off of the PSTN? DSL is part of the broadband support. The copper local loops, as part of the PSTN, need to remain in service and be maintained to support DSL. A recent experience with a DSL problem puts the future of DSL in question. I needed a new copper pair for connection to the C.O. because of the degradation of the existing DSL copper pair. The repair person that it was OK for now to assign another pair but there were no plans to add, fix or improve my local copper pairs. No new copper cable installation was expected because Verizon is promoting FiOS and retiring the copper pairs.

The move to FiOS means that there will be more unused copper pairs because of the migration to FiOS. However, the local copper cable is aging. As pairs become unusable for DSL service, then I will be encouraged to move to FiOS by raising my DSL rates, or canceling my DSL service with a FiOS promotional offer or terminating

my DSL service when no more usable copper pairs are available. What will happen to DSL services when the ILECS sell off or close down the PSTN. Will DSL be like the PSTN, headed for extinction?

Alarm and Security Systems

Traditionally alarm and security have depended on the copper wire connection to the customer to be the only choice. Technology has advanced so that IP and wireless connections can be used for monitoring remote alarm and security systems. But this transition has occurred for mostly new installations or those who have opted for cable access for voice communications.

Moving to an all broadband environment that eliminates the copper loops will force both the customer and alarm/security companies to incur costs for the transition. Since there alarm/security services will not be shut down, either the alarm/security company will raise rates or require long term contracts to recoup the addition cost to migrate to broadband access.

Interface with Smaller Telcos

The smaller independent Telcos and ILECs may not want to pursue the PSTN closure on the same schedule as that of AT&T. Although these Telcos can see the eventual migration to a broadband structure, they may not have the capital for the change or the customer base may not want the change or the present PSTN assets still have some capitalization time left.

The smaller Telcos would then have to have interfaces to the broadband networks to carry their voice calls. Should the broadband companies pay for the interface or the Telcos? Whoever pays, the charge structure for inter-carrier connections may have to change. What is worse is the interface will be temporary so that the cost recovery will be over a short time period, possibly 2 to 4 years, far shorter than what the cost recovery time has been in the past 10 to 20 years.

International Connections

The international carriers have the same issues as the smaller domestic carriers. Migration to a broadband structure will vary greatly depending on the country's economy as well as the amount of international communications traffic. Cities and suburban areas will move faster to broadband service than rural communities.

The international Telcos would then have to have interfaces to the domestic US broadband networks to carry their voice calls. Should the US broadband companies pay for the interface or the international Telcos? Even though there is considerable voice traffic carried over international VoIP trunks, there is still the connection through the in-country PSTN network. The in-country carrier may have to pay for the interface since it will be terminating a VoIP trunk. Would the US carrier be responsible for the interface cost? Not if the US carrier can avoid the cost.

Whoever pays for the change, the charge structure for international inter-carrier connections may have to change. What is worse is the interface will be temporary so that the cost recovery will be over a short time period, possibly 2 to 4 years for the more technologically advanced countries, far shorter than what the cost recovery time has been in the past 10 to 20 years. The slower the migration to broadband, the longer the international interface will remain in place, thereby spreading the cost over more years.

US Rural Support

A majority of the Universal Service Fund is directed to rural Telcos to subsidize local voice services. This is because the voice service real cost does not produce a profit for the rural ILEC.

You have heard of the digital divide that has developed for Internet and broadband access. If there is no COLR and no USF subsidy, then the rural customers could expect to either lose voice service or have to pay a heavy premium for the service. There goes universal service creating a voice divide.

Individual small rural carriers can put pressure on the federal and state governments through the associations. However, there does no appear to be any concerted effort by the associations to be proactive yet about the AT&T comments to the FCC. The small ILECs will have to make a coordinated effort to deal with the closure of the PSTN and the elimination of the COLR policies.

Cost to Consumers

What if there is no COLR for wireless of broadband? Then the residential customer will be forced to migrate to wireless or broadband services. The wireless carriers say there is competition among themselves. But look at the long term contracts and doubled termination fees that are part of the US market. Also consider that the U.S. does not allow a universal cell phone in the US as is available in Europe. Unless the FCC changes some of the wireless carrier practices and really opens up competition, the residential customer will be at the mercy of the carrier. Voice service will be available where the carrier chooses.

When you look at the PSTN, the phone was an open platform, there are not any roaming charges, rates are low and termination charges were virtually non-existent. My conclusion for the residential user is that they will be provided the voice service with considerable limitations in their flexibility.

Many of the VoIP services are treated like Internet access. To get the better rates, the customer can be locked into 2 year contracts with termination penalties. The customer service from cable carriers offering voice services is a poorer than from my ILEC. I do not anticipate that the wireless and broadband worlds will be as universal, flexible and affordable as the PSTN.

Cost to Enterprises

The loss of the COLR policies will affect small businesses more than the larger enterprises. It will also affect the branch offices of the larger enterprise. The national and regional sites of the large enterprise will most likely not be adversely affected by the closure of the PSTN and the loss of a COLR. However the enterprise's customers may be affected. I anticipate there will some large enterprises that depend on the PSTN will lobby for a low impact transition to broadband and wireless voice services so that they will not be penalized by the migration.

Probable Consequences

When the FCC and the states decide to schedule the closure of the PSTN, AT&T and the other COLRs can divert more investment to the broadband services. If the COLR policies and regulations are terminated (what I think is the real goal of AT&T), AT&T and the other ILECs can shut down services anywhere they choose. They could also reduce the maintenance of the PSTN components so that POTS deteriorates so badly that the customers will be forced to move to broadband or wireless access to regain quality voice service.

There will be battle over the termination of COLR policies. Each state may take different approach. AT&T may want the federal government to impose a unified approach for all states, something that I think may be impossible to achieve. There will be many valid arguments to impose COLR on wireless and broadband carriers. Additionally, the USF will have to be recreated to cover the unserved areas if the COLR policies stay in force. This could take many years for the congress, FCC and PUCs to act and implement new policies.

Is wireless service the PSTN replacement? There are several concerns:

- What carrier in today' economic environment wants to accept the responsibilities and expenses for providing universal service in their territory.
- The COLR policies would have to change state by state and the FCC would have to publish COLR policies for the wireless networks. This will be strongly resisted. Success for changed COLR policies would be fragmented at best.
- The USF would have to be redesigned to collect funds to support the non-profitable areas served by the wireless COLR.
- The cost of wireless service would go up to fund the USF. I am sure someone will say that this will hurt the consumer and business and affect jobs. Therefore there will be grass roots movements (probably funded by special interest groups) to block the USF changes.

- The wireless carriers already have strong lobby organizations that have effectively blocked the opening of the wireless network competition. With the latest decision by the Supreme Court, opening the funding of political contributions for adverting and publications to any organization, I expect that those up for election will have a litmus test for their vote on these issues.
- The wireless COLR would be forced to improve their backup power arrangements.
- If a wireless network is the PSTN replacement, then I would expect that there would have to be a national code for E911 location information instead of the fragmented E911 rules that exist state by state today.

The same concerns would apply if broadband service providers became the COLR.

The migration will however take many years, possibly a decade or more to accomplish. During the transition away from the PSTN, there will still be many islands of PSTN components that need to be operated and maintained. I expect there will be many problems that will tax the ILECs and cause financial distress. The vendors that supply the hardware and software that now operate the PSTN will also want to terminate the legacy PSTN products since they will see a disappearing market. Legacy replacement parts will become harder to locate. There may be some firms that enter the market as third parties to support PSTN products. An example is the third party maintenance organizations that are already extending support for Nortel products as Avaya absorbs Nortel thereby extending the Nortel product's life.

A variation of this article was posted at www.nojitter.com.

About the Author

Gary Audin has more than 40 years of computer, communications and security experience. He has planned, designed, specified, implemented and operated data, LAN and telephone networks. These have included local area, national and international networks as well as VoIP/IPT, UC and IP convergent networks in the U.S., Canada, Europe, Australia, Caribbean and Asia. He has advised domestic and international venture capital and investment bankers in communications, VoIP, and microprocessor technologies.

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Division Cofounders:
Jim Metzler
jim@webtorials.com
Steven Taylor
taylor@webtorials.com

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