

them, the behavior of the new technologies is not understood and therefore their effect on other loop technologies cannot be predicted. Although the technology may be non-standard, there are standard techniques to characterize its power spectrum and interference properties that can be used to determine its interaction with other services.

16. An approach to enable the deployment of new technologies without causing harm to existing loops is to place reasonable limits on the potential interference it can cause. The new technology should be evaluated to determine that it causes no more interference than existing technologies deployed on the loop plant.

17. One way to do this is by comparing the power spectrum of the new technology against that of existing technologies to validate that it will be no worse than existing ones. For new technologies whose spectra do not facilitate the comparison, an analytical method should be used to determine spectral compatibility.

18. A good spectrum management policy is one that maximizes the use of the loop plant, enables multiple technologies to be deployed, and has the flexibility to encourage the deployment of emerging DSL technologies. It should not be biased towards any single existing technology since the market is ever evolving and future applications may require the deployment of different technologies. The FCC must issue new rules that allow both ILECs and CLECs to introduce new technologies in an equitable fashion.

### **C. Significant Degradation**

19. The FCC asked for comment on how to define the term “significantly degrade” (para 88 of the NPRM). Under Covad’s proposal, the FCC only needs to consider whether technologies cause significant degradation. The FCC does not need to examine the definition on an individual loop basis because if a technology is qualified, there should be no grounds for dispute.

20. Once a technology is found to have acceptable levels of interference, there should be no deployment restrictions. Carriers must deploy their services with the understanding that there will be other DSL services in the plant. Each carrier's deployment rules must assure that its services can tolerate the presence of other DSL services.

21. A carrier deploying DSL service must develop design rules that define the reach of its services assuming some number of other services on the loop plant. If the technology is qualified, and the carrier has loops that are affected by other services, it points to faulty assumptions and deployment rules. For instance, ADSL service might be deployed, as SBC is proposing, with the assumption of no other services in the immediate vicinity. If that service is degraded in terms of either reach or rate, it is up to SBC to correct its engineering rules, since SBC based them on faulty assumptions.

22. The FCC should find a technology to be significantly degrading when that technology causes more interference than other technologies already deployed in the loop plant. Obviously, T1 AMI signals should not be used as a benchmark because of the problems they cause (see below).

#### **IV. The FCC Should Adopt Forward Looking Solutions**

##### **A. The Industry Should Discontinue deployment of AMI T1.**

23. The FCC correctly concluded that T1 AMI signals are one of the most significant causes of interference in the outside plant today. Consequently, the FCC's recommendation to discontinue future deployment is a sound technical decision that will make the outside plant more hospitable for future DSL deployment.

24. Obviously, eliminating current T1 AMI deployment will also improve conditions for the spectrally more desirable DSL services. From a technical perspective, there is no

reason why all current T1 AMI services cannot be migrated to HDSL today. However, there are clearly some costs and operations complexities associated with phasing out T1 AMI. Covad is not in a position to know the extent of the current T1 AMI deployment through out the country. Without this information, we are not in position to comment on how quickly the FCC should order ILECs to eliminate T1 AMI from the outside plant.

**B. The FCC Needs To Adopt A Neutral Framework For Introducing New Technologies**

25. Paragraphs 82 and 83 of the NPRM seek comment on whether generic masks and/or a calculation-based approach would be appropriate means to address spectrum compatibility issues. At the time of the FCC's August 1998 NPRM in this Proceeding, the ANSI T1E1 standards committee on Spectrum Management ("the Committee") was considering two methods for determining whether a technology was "spectrally compatible". First, the Committee was analyzing the use of a single generic power spectral density ("PSD") mask that would apply to all technologies. Second, the Committee was also considering a calculation-based approach.

26. Recently, the Committee rejected both methods in favor of adopting several masks, each of which applies to a limited range of DSL technologies. Furthermore, the Committee has also stated that the calculation-based approach was not sufficient to justify approval of a new technology. Rather, the calculation-based approach would simply be one factor in determining whether ANSI would approve a new technology with a new PSD mask.

**C. The FCC Should Oversee the Introduction of New Services, but not Stifle Innovation by Equipment Manufacturers**

27. Although ILEC participation is vital, by far the most important element of any spectrum management solution is to take the ultimate decision making power out of the hands of the ILECs. As the FCC already noted, ILECs cannot be trusted to unilaterally make spectrum management decisions. With that starting point in mind, Covad suggests that the FCC adopt a plan that would include the following additional concepts.

- Any carrier (including the incumbent) seeking to deploy a new non-standard technology whose power spectrum does not fall under one of the accepted masks would have to file a plan with the FCC. The plan should include an affidavit and supporting evidence stating that the new technology does not appear to pose a significant threat to the network based on the analytical method to establish to spectrum compatibility as defined by T1E1.
- The application will provide the carrier with the right to begin a “limited commercial deployment” of the new technology. Specifically, the carrier would have the right to deploy the new technology in two different areas consisting of up to fifty central offices and up to 5,000 lines in each of those two areas.
- Beginning six months after “limited commercial deployment”, the carrier is permitted to apply to FCC or the FCC proxy to demonstrate that technology has been “successfully deployed.” The FCC may approve the application, stay it pending further analysis of the trial or reject the deployment.

- During the limited commercial deployment, the carrier shall maintain an “incident log” detailing any complaints of interference that might be attributed to the new technology.

#### **D. The FCC Should Reject Dedicated ADSL Binder Groups**

28. SWBT has proposed a spectrum management program using binder group management<sup>71</sup>. Specifically, SWBT has proposed reserving specific binder groups for ADSL in advance of deployment. Binder group management should be rejected because it is designed to favor ADSL to the detriment of other DSL technologies that are based on echo cancellation, including SDSL and HDSL, and because binder group management is not operationally feasible.

##### **1. Binder Group Management Promotes ADSL Over Other DSL Systems**

29. Reserving ADSL binder groups discriminates against those DSL providers who have chosen to deploy other forms of DSL. Specifically, this scheme effectively restricts the deployment of other DSL services by placing binder groups off limits to them. Obviously, each binder group that is reserved for ADSL cannot be used for the other DSL technologies. By itself this may not be a serious problem. However, the problem is magnified several times if the ILEC also proposes, as SWBT does, to restrict the deployment of other DSL technologies in binder groups “adjacent” to the reserved ADSL binder group. Assuming that a binder group has six adjacent binders group, one dedicated ADSL binder group restricts the deployment of other DSL technologies in seven binder groups. Furthermore, there is no guarantee that an ILEC choosing to reserve ADSL binder groups simply does not over-reserve to protect its future ADSL plans. The problem is exacerbated even further when the ILEC chooses the spectrally

most desirable binder groups for ADSL leaving spectrally “dirty” groups the other DSL technologies.

30. When binder group management actually *reserve* ADSL binder groups, the scheme favors demand for future ADSL service over current demands for other forms of DSL. Since the binder groups are actually reserved in advance of actual ADSL deployment, the ILEC will be denying loops to a CLEC seeking to deploy its DSL in anticipation of potential ADSL orders.

## **2. Binder Group Management Is Not Operationally Feasible**

31. Binder group management is premised on the idea that loops stay in the same binder group and maintain the same spacing in that group as they travel in the field. If that were true, binder group management could be used to maintain some physical separation between loops that carry particular kinds of signals. Unfortunately, actual outside plant conditions are so chaotic that binder group management is completely infeasible. There have been two recent papers describing problems associated with binder group management. Bell Atlantic issued one paper entitled “Binder Group Segregation Is Not Feasible” T1E1.4/99-018 (February 1-4, 1999), and Bellcore and Ameritech jointly submitted another paper entitled “Binder Group Fill” T1E1.4/00-021 (February 1999).

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<sup>71</sup> SWBT has renamed its particular proposed program Selective Feeder Separation (SFS).

32. There are serious logistical problems associated with binder group management in the outside plant. First, ILECs would need an accurate inventory of loops and binders and their relative positions throughout the loop plant, and they do not have it. Second, binder group management incorrectly assumes binder group integrity. Binder group management requires that the loop's relative position in the cable remains constant. It does not. For one, cables were not carefully spliced to preserve binder-group adjacency. Also, binders branch off the main cable at various distances from the central office. It is commonly understood that binder group adjacency is not preserved in the outside plant.<sup>3</sup>

I declare under penalty of perjury under the laws of the United States that the foregoing is true.

Dated: 6/14/99

Anjali Joshi  
Anjali Joshi

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<sup>3</sup> The Bell Atlantic paper describes why binder group integrity is not maintained.

**ATTACHMENT 2**

**MARKETING MATERIALS FROM  
ILEC WEB PAGES**

**IN THEIR OWN WORDS:**

**ILEC LINE SHARING ON THE INTERNET**

**U S WEST MEGABIT SERVICES**

1. "MegaBit Services," [http://www.uswest.com/pcat/for\\_home/product/0,1084,43\\_1\\_3,00.html](http://www.uswest.com/pcat/for_home/product/0,1084,43_1_3,00.html)

MegaBit turns your current phone line into an ultra-fast Internet connection. **You'll be able to talk on the phone and surf the Web on a single phone line, saving you from additional phone lines.**

2. "Pricing," <http://www.uswest.com/products/data/dsl/pricing.html>

**Both the data and voice traffic travel on the same pair of telephone** wires so the user may use the phone while working on the computer. **The customer's existing phone service remains the same.** Furthermore, the customer continues to pay the current charges for residential or business phone service.

3. "Product FAQs," <http://www.uswest.com/products/data/dsl/faq.html>

8. *How do you decide where to deploy service?*

. . . While we do intend to deploy MegaBit services out of region, we are starting with cities in region. **There are simply fewer obstacles to clear for deploying in region.**

\* \* \*

12. *Do customers need to have voice service or is it included in the price of the MegaBit Services offering?*

**MegaBit Services are an enhancement to existing voice service.** Customers must have existing telephone service with U S WEST to order MegaBit Services. The charges for MegaBit Services are in addition to the existing voice services the customer is paying.

\* \* \*

14. *Do I need another phone line to get MegaBit Services?*

**No. You do not need to purchase another phone line. MegaBit Services, based on DSL technology, uses an existing phone line to transmit data signals as well as analog voice signals.** The customer must continue to pay the current charges for residential or business phone service. Phone service is not included in the price of MegaBit Services.

\* \* \*

4. "Technical FAQs," <http://www.uswest.com/products/data/dsl/faq.html>

1. *What is DSL technology?*

DSL (Digital Subscriber Line) provides simultaneous voice and high-speed data services over a single pair of copper wires.

\* \* \*

9. *What are some of the differences between DSL technologies and ISDN?*

**. . . DSL based technologies are easier to provision at the Central Office than ISDN is.**

\* \* \*

12. *Do customers need to be loop qualified (like ISDN requires)?*

Yes, loop qualification is required. **The process will be similar to the one for ISDN only quicker since less information is necessary in order to be qualified.**

\* \* \*

28. *Can a customer run analog modems and fax machines on the same line as the MegaBit Service line?*

**Yes, the voice line supported by MegaBit Service is just like any other POTS (Plain Old Telephone Service) line.** You can connect the voice line to any device registered with the FCC (Federal Communications Commission) to support either voice or data transmission.

## BELLSOUTH.NET FASTACCESS SERVICE

1. "Introducing BellSouth.net FasAccess Service," <http://www.bellsouth.net/external/adsl/>

**Talk and surf at the same time.**

2. "What is It?" <http://www.bellsouth.net/external/adsl/faq.html>

*Can I talk on my phone at the same time?*

Sure. Since BellSouth.net FastAccess service "piggybacks" on your existing copper phone line, you can talk on the phone (or send a fax) and be on the Internet at the *same time*! There is no impact to your FastAccess speed when you use your telephone, and **no need to have an additional line** dedicated to the Internet.

3. "Cost," <http://www.bellsouth.net/external/adsl/cost.html>

**Remember – you'll still be able to use it as a phone line while you're on the Internet!**

## PACIFIC BELL FASTRAK ADSL

1. "FasTrak DSL," <http://www.pacbell.com/products/business/fastrak/dsl/> (emphasis added)

[Y]ou can download data, graphics or audio and video files at high speeds, while simultaneously talking on the phone or sending a fax – **and you don't need additional phone lines to do it.**

2. "Frequently Asked Questions," <http://www.pacbell.com/products/business/fastrak/dsl/dsl-faq.html>

*What are the benefits of Pacific Bell's DSL Service?*

**. . . Data over voice, so you can surf the 'Net and use your phone at the same time!**

\* \* \*

*Why would customers want FasTrak Frame Relay or T-1 service when they could have FasTrak DSL services?*

**. . . FasTrak DSL Services have limited availability, but offer simultaneous data over voice capability, with no need for a second line.**

\* \* \*

*Will Pacific Bell FasTrak DSL affect customers' existing voice services?*

**No. Pacific Bell's FasTrak DSL is compatible with all of Pacific Bell's voice services for business and residential customers.**

\* \* \*

*Will I need to order a new line if I want to have this high-speed bandwidth connection for data transport?*

**No. ADSL technology utilizes signal frequencies above the voice band without voice interference.** However, if you are within the required distance from your central office but do not qualify for DSL due to the quality of the line you have, then installing a new line for the DSL may alleviate this problem. However, you will still be charged for your voice service.

\* \* \*

*Will I be able to use my voice portion of the services while being connected to my Internet Provider?*

Yes. As mentioned earlier, the data transmission is separated from the voice transmission. This means **that you can “surf the net” and receive or place telephone calls over this same single ADSL line** all at the same time.

In addition, your telephone line will remain operational even if you lose power to your PC.

## BELL ATLANTIC INFOSPEED SERVICES

1. "ADSL Information for the ISP,"  
[http://www.bellatlantic.com/business/adsl/isp\\_sp\\_packet.htm](http://www.bellatlantic.com/business/adsl/isp_sp_packet.htm)

ADSL allows the customer to make voice or fax calls while simultaneously transmitting data. **Voice does not impact the data service, and data does not impact the voice service.** (p. 3)

2. "Bell Atlantic Infospeed DSL: Business Service"  
<http://www.bellatlantic.com/business/adsl/index.htm>

"Talk and surf simultaneously"

3. "What is Infospeed DSL?" <http://www.bellatlantic.com/business/adsl/whatis.htm>

"With Infospeed DSL service, a single phone line becomes a true multi-tasking tool, allowing you to use your telephone or fax machine while using your DSL modem for a high-speed data connection."

4. "Frequently Asked Questions" <http://www.bellatlantic.com/business/adsl/faq.htm>

*Does DSL require installing an additional phone line?*

No. ADSL technology utilizes varying frequency spectrums, 0-4 kHz for POTS (Plain Old Telephone Service) and 100 kHz – 1 Mhz for data transmission. This provides for simultaneous analog voice or fax and DSL data transmission over the same telephone line. **You can still use your phone as you do now.** Think of the DSL as an added feature.

*If my DSL modem fails or loses power, do I lose phone service?*

No. **ADSL modem is designed so that your normal service will operate even if the modem is unplugged or otherwise disabled.**

5. "Infospeed DSL for Service Providers"  
<http://www.bellatlantic.com/business/adsl/servprov.htm>

Bell Atlantic is providing the transport, the basic high-speed access connection to the business and residence. That is what we do best. Here is where you fit in: Content, Internet Access and Services. That is what you do best.

## SOUTHWESTERN BELL TELEPHONE COMPANY FASTRAK DSL

1. "Product List," <http://www.swbell.com/cgi-bin/page.exe?file=Glossary.html>

*FasTrak* DSL (Digital Subscriber Line) is a digital data service offered by Southwestern Bell that provides telecommuting capabilities up to 50 times faster than a standard 28.8 modem. That means you can download data, graphics or audio and video files at high speeds, while simultaneously talking on the phone or sending a fax -- **and you don't need additional phone lines to do it.**

2. "How will it help me?", [http://www.swbell.com/cgi-bin/page.exe?file=ProdHelp.html&PRODUCT\\_CODE=DSL&BACK\\_URL=&BACK\\_TEXT=](http://www.swbell.com/cgi-bin/page.exe?file=ProdHelp.html&PRODUCT_CODE=DSL&BACK_URL=&BACK_TEXT=)

Does this sound familiar? Choosing between voice and data. Do I surf the Internet or should I call home?

. . . *FasTrak* DSL puts you in the driver's seat. You can use voice and data simultaneously over the same phone line. **There is no need to choose between voice and data.**

3. "Who else uses it?" [http://www.swbell.com/cgi-bin/page.exe?file=ProdUses.html&PRODUCT\\_CODE=DSL&BACK\\_URL=&BACK\\_TEXT=](http://www.swbell.com/cgi-bin/page.exe?file=ProdUses.html&PRODUCT_CODE=DSL&BACK_URL=&BACK_TEXT=)

[Y]ou can be more productive because **it allows you two ways to communicate over the same phone line.** So not only are you surfing the Internet more efficiently, you can return phone calls at the same time.

4. "Frequently Asked Questions," [http://www.swbell.com/Catalog/Product\\_Detail/DSL/faqs.html](http://www.swbell.com/Catalog/Product_Detail/DSL/faqs.html)

*Will I be able to talk on the phone or send a fax while I am connected to the Internet or my company's network?*

Yes. *FasTrak* DSL allows for simultaneous voice and data transmission. **This means that you can surf the web and receive and place telephone calls at the same time on a single phone line.** In addition, your telephone line will remain operational even if you lose power to your PC.

\* \* \*

*Will Southwestern Bell FasTrak DSL affect my existing voice services?*

No. Southwestern Bell *FasTrak* DSL is compatible with Southwestern Bell's voice services for residential and business customers.

\* \* \*

*Will FasTrak DSL work over my existing phone line? What about my additional line?*

Southwestern Bell *FasTrak* DSL **provides high-speed data and voice simultaneous over either your existing phone line or your additional line** – so you can Surf the web and talk on the phone or send a fax at the same time.

*Can I still use existing features such as Caller ID, Call Waiting and Call Forwarding if I also purchase FasTrak DSL?*

Yes. **The addition of *FasTrak* DSL on your existing phone line does not interfere with these features.**

*What kind of equipment will I need to subscribe to Southwestern Bell FasTrak DSL?*

. . . We will arrange for you to purchase a DSL modem that is compatible with the technology, \*a "splitter" that divides voice and data traffic, and an Ethernet network interface card that connects the modem to the PC. As compatible equipment becomes available, customers may use this equipment from other providers, as long as the equipment meets the interface and other technical specifications of Southwestern Bell's *FasTrak* DSL offering.

\* \* \*

*What is a POTs Splitter and how does it work?*

Since DSL provides high-speed data and voice telephone service simultaneously over an existing phone line, a "splitter" is required to separate the voice service from the data service. This device, called a POTs Splitter, allows data and voice to be "split" between your computer and telephone. A POTs Splitter is also known as a lowpass/high-pass filter since the data is transmitted at high frequencies and voice service is transmitted at relatively low frequencies. **A similar splitter is located at our central office to separate the voice and data services between the PSTN (Public Service Telephone Network) and the DSLAM (Digital Subscriber Loop Multiplexer), respectively.** Everything you need to get up and running with *FasTrak* DSL, including the splitter, can be ordered for you and installed by Southwestern Bell.

## GTE DSL

1. "GTE Network Services DSL Frequently Asked Questions," [http://www.gte.com/dsl/idsl/ns\\_faq.html](http://www.gte.com/dsl/idsl/ns_faq.html)

*Can the telephone still be used with DSL service?*

**Yes, DSL end-users can still use their existing phone line for voice communications while using DSL service for Internet access simultaneously.** Traditional analog voice band modems use the same frequency band, 0-4 kilohertz (Khz), as telephone service, preventing concurrent voice and data use. **Because the newer DSL modems operate at frequencies above the voice channel from 100 Khz to 1.1 Megahertz (MHz), POTS (plain old telephone service) and DSL data service concurrently.** By using the same telephone line, there's no need for a new telephone number to use DSL service. Moreover, DSL modems are designed so that normal telephone service will operate even if the DSL modem is unplugged or otherwise disabled.

*What will happen to the voice features on an existing phone line?*

**Once DSL is determined to be available on your existing phone line, all features offered on the line will remain available.**

\* \* \*

*What telephone service does an end-user need for DSL access?*

Any GTE Network Services customer with voice grade telephone service is eligible for DSL service. DSL works over a standard plain old telephone service (POTS) line.

2. "GTE DSL Solutions," <http://www.gte.com/dsl/index.html>

. . . DSL end-users can still use their phone while they are online. Your DSL service from GTE allows **sending and receiving of voice and data simultaneously on an existing phone line.**

3. "What is DSL?" <http://www.gte.com/dsl/whatdsl.html>

With GTE Digital Subscriber Line (DSL) solutions, there's no need to purchase an additional line to get high-speed access to the Internet. **DSL works with the existing phone line.** The DSL modem and splitter connected to the existing phone line separate voice signals from high-speed data . . . This allows DSL end-users to take a voice call and surf the Net, **all at the same time!**

GTE DSL solutions offer numerous to the user including:

. . . **Simultaneous Voice and Data Connections Over The Same Line:** DSL end-users can make voice calls and access real-time stock quotes on the internet simultaneously or send a FAX while browsing the World Wide Web. **There's no need for a second phone line.**