

**A series of articles on**  
**Internet Issues**

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**Uyless Black**

## Internet Issues

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## Net Neutrality: Who will control the Internet?

*Part one of a two-part series*

By UYLESS BLACK  
Special to The Press

You and your neighbor, Joe, use the Internet. Joe logs on to the Net (as it is called) to play video games and watch movies. He is on the Net for most of his waking hours.

In contrast, you occasionally log on to the Internet to send and

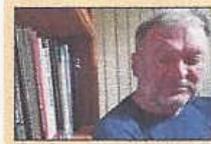
receive emails and photos. By virtue of the Internet being a shared resource, Joe is using more of a community pool than you. Video games and movies consume considerably more of the Internet's capacity than email and pictures.

The two of you are paying close to the same amount of money to use the Internet. At first glance, this arrangement is of no consequence.

What do you care about Joe's couch potato habits? With only Joe and you in the neighborhood using the Net, you are not aware of this unbalanced sharing of Internet bandwidth (the term used to describe Internet's capacity to support user traffic).

But it is not just Joe in your neighborhood who is, as the Internet geeks say, "hogging bandwidth."

see NET, A5



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### NET from A1

Other neighbors, such as Jim, John, and Jane are watching Netflix movies. During times when your neighbors are enjoying "Avatar" and such, you notice it takes longer, much longer, to send and receive your email and photos. Why? Because your neighbors (and millions of other Internet users) are consuming more bandwidth than you.

Yet Joe, Jim, John, and Jane are paying roughly the same amount of money each month as you do for Internet usage. Is that fair? Their lifestyles affect your lifestyle. Does that make sense? Let's explore this issue in a bit more detail. In so doing, we will reveal the mysteries surrounding this unrestricted practice. It is called "Net neutrality."

The issue of Net neutrality is a prominent topic in the news. The legacy of unrestricted and relatively free use of the Internet is breaking down. This issue and its resolution will affect every user of the Internet, including companies and individuals.

According to the International Telecommunications Union, 81 percent of the United States adult population (called end-users in this article) logs on to the Internet.

Rulings and legislation on Net neutrality are coming forth from Washington, D.C. The FCC and Congress, with the courts refereeing, are debating if companies which transport emails, movies, phone calls, and other images through the Internet can create and enforce rules on how this traffic is delivered. General discussions and findings have been made available for public comment. The FCC anticipates having its final rulings in place by the end of 2014.

In a nutshell, what comes forth from the FCC will affect how companies and individuals use the Internet. The FCC will determine if the consumers of Internet bandwidth will have to pay more for using additional bandwidth. The FCC rulings might also determine if the Internet will be restricted in how it is used, such as giving Joe higher priority for watching "Avatar" than for your sending a photo to a friend. With 81 percent of America's citizens using the Internet, this issue is not a trivial matter.

These potential restrictions raise many questions, some of which run counter to the legacy of the relatively free use of the Net. The issues are complex and bring up scores of legal, technical, social, and political questions. Notwithstanding these complexities, the issues boil down to: Who will control the Internet?

Here is a summary of the issues, using Joe and you as example guinea pigs:

- Possibly giving precedence to Joe's video traffic over your photo traffic: Discriminating

between different types of traffic.

- Possibly slowing the delivery of one party's traffic (your photo), but speeding-up the delivery of traffic from another party (Joe's movie): Discriminating between different users' traffic.

Net neutrality means the companies that provide Internet services — such as Comcast, Netflix, Google, Verizon, and AOL — treat all traffic on the Internet the same way. There is no discrimination based on traffic from a company or an individual. There is no discrimination on the amount and/or type of traffic sent through the Internet. This means all individuals and organizations have equal access to the Internet's bandwidth.

The allocation of bandwidth is based on the traffic itself. Joe's Netflix movie gets more bandwidth than your email, but you and Joe generally pay the same fee to use the Net's bandwidth. (Exceptions exist, and Internet providers have different rates. I am working with a general model for this article.)

Historically, the Internet has been neutral to these issues. From its inception, the design has been that of a best-effort delivery service for any kind of traffic, regardless of the sender or receiver(s) of the traffic. Some exceptions exist, such as flow-controlling traffic to prevent saturation and network congestion, but this kind of discrimination has been applied to all traffic, regardless of its diversity. In addition, managing traffic has been a simple task, because Internet traffic traditionally consisted of short email messages or file transfers of modest sizes.

Not so today. Long-gone is the Internet that once transported only end-user emails and small files to people sitting at semi-teletype workstations. Today, these applications must share the Internet's bandwidth with interactive games, movies and TV shows, photo downloads and phone conversations. Indeed, traffic diversity and varying requirements for this traffic are a big part of the Net neutrality issue.

The problem with unrestricted use of the Internet's capacity is that your neighbors and you (and millions of others) are sharing a finite resource (the Internet's bandwidth). One reason (and a common occurrence) is that you are sharing a physical channel with your neighbors, such as the telephone line or TV cable running through your neighborhood (as well as servers and other machines). As mentioned at the introduction to this article, your neighbors' hogging of this shared bandwidth is being done at your expense. Is this arrangement fair? That is a big part of the Net neutrality debate.

Tomorrow's article will explore this question in more detail.

## Net Neutrality: Who will control the Internet?

Part two of a two-part series

By UYLESS BLACK  
Special to The Press

In yesterday's article about the subject of Net neutrality, the idea was discussed about the possibility of you paying more than your neighbor Joe for using the Internet. We covered the idea that Joe might not be paying less in money. Rather, he might be using more of the Internet's com-

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mon pool of performance, one shared by all: its capacity, its bandwidth.

We explored the unpleasant fact that Joe might be stealing your rightful part of this bandwidth. In so doing, Joe might rob you of your ability to send a photo to someone within a reasonable time. He might also deny you the bandwidth you need to log on to Net-

flix to see a movie. He is a pain in the — forgive the French — bandwidth ass. But why should he care? He is paying about the same to use the Internet bandwidth as you are.

With the first article in mind, let's move to other aspects of this vital issue. Vital, in that 81 percent of America's population will be affected by what is decided in D.C. about Net neutrality.

see NET, A2



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### NET from A1

Much of the confusion about this issue has come about because the media, Congress, and even the FCC have not clearly and consistently identified the different companies who have billions of dollars riding on the FCC rulings. The names and functions

of these institutions are summarized below to clarify their roles in supporting you and me... and Joe.

For the remainder of this article, keep in mind these companies have different skin in the game than an individual citizen. Some of them are adamant in wanting to do away with Net neutrality. They want to charge Joe, you, and me for the

amount of bandwidth use. Ironically, some of these organizations are fearful that they will also be charged for bandwidth use by other providers. Let's delve into a bit more detail. In so doing, we will address the fundamental issues of Net neutrality.

- The channel provider: Controls the physical media (Such as the local telephone company which owns the telephone wires running through neighborhoods).

- The content provider: Provides the information that is placed on the physical media (Such as Netflix and Facebook).

- The service provider (the Internet Service Provider, ISP): Provides the Internet user with the ability to log-on to the Internet to exchange content. AOL comes to mind, but like many ISPs, AOL is getting into the content business, which leads to one of the key components in the Net neutrality debate.

And here is where it gets dicey:

- The multi-function provider: Provides a combination of the three basic services. An example is Comcast.

The problem facing the FCC and the providers listed above deals with the fact that only so many companies can be a physical channel provider.

For example, it makes no sense to lay multiple telephone lines in a neighborhood. Consequently, content providers such as Netflix, Google, and Facebook are dependent on the companies that own the physical links. Of course, so are individual users.

To amplify the 'dicey' nature of this, traditional channel providers, such as Frontier Communications, have evolved to become multi-function providers. Consequently, if a channel provider which owns the wires, cables, and cellphone channels of the Internet also becomes a multi-function provider, the "pure" content providers who do not own physical channels might not be sleeping well at night. After all, the multi-function competitors also own the wires the content providers must use.

Who is to say whether a multi-function provider, such as Comcast, might favor its distribution of movies over that of another movie distributor, such as Netflix? After all, Netflix is forced to use a multi-function provider's channels, as it owns no wires or cables. Netflix might have its video traffic throttled by Comcast, so Comcast's video would be of higher quality.

Mind you, I am not accusing Comcast of

this dastardly deed. I am presenting an abstract but apt scenario of one Net neutrality issue.

Given this environment, the company which controls the Internet physical channels has a different opinion about Net neutrality than a company which does not own this media, but uses it.

If Net neutrality is eliminated, end-users will be dependent on the Internet providers described in this article. In one fashion or another, the Internet providers who favor charging for bandwidth usage state that competition will keep prices down and performance high. In the meantime, Uncle Sam is allowing these companies to merge and consolidate, which in my view, is eliminating the very competition they claim will exist in the future.

Nothing in life is simple, including the Net neutrality debate. Let's return to your bandwidth-hogging neighbor. Do you really want to encourage Joe's couch potato habits? Should he not pay his own way? Is he robbing you of your rightful share of the bandwidth? Don't you become a bit irritated when you try to download a picture and it is slow as rush hour traffic because of his 24-hour habit of watching "24?"

In its simplest terms, and using topical jargon, should certain parties be granted 'fast lanes' on the Internet highway? Can others be placed in slow lanes and still receive adequate service to meet their needs? Should the users of the fast lanes pay more than the slow-lane users?

Although it is too soon to make a judgment on what the FCC will do, it appears these questions will be answered in the affirmative. If so, the next question goes to the crux of the Net neutrality debate: Who will control the traffic on these lanes and their associated pricings?

It is a dogfight in relation to the future of the Internet. The rulings of the FCC, Congress, and the courts will be vital to all Internet users. The Internet providers described in this article are lobbying the FCC based on their interests and those of their stockholders. They are not lobbying the FCC based on their interests in the individual citizen. We should be paying attention.

As these issues are argued during the next few months, it is certain the Internet channel, content, and service providers are going to follow that great human tradition: "What's mine is mine, and what's yours is up for grabs."

# Have you been reading my email?

*Editor's note: This is part of an ongoing series for consumers about Internet issues.*

By UYLESS BLACK  
Special to The Press

You go to the mailbox to retrieve your letters, bills, and advertisements. There, you're surprised to find your neighbor as well as a stranger examining your envelopes. They've also opened several of the

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envelopes and read the contents inside them.

Your reaction? I will not venture a guess, as this is a family newspaper, but I would speculate it would not be one of acceptance. Yet this situation is identical to what is happening to our Internet correspondence, our email. To frame the issue, which I hope will raise your concern about

privacy in the Internet, I will start with two questions pertaining to postal service mail:

- Should anyone but the recipient of a letter be allowed to read and record the information on the envelope?
- Should anyone but the recipient of this envelope be allowed to read and record the information in the letter that was placed inside the envelope?

see BLACK, A5



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## BLACK from A1

I suspect your answer is no to both questions. If so, next question: Why should we relinquish this right of privacy because our letters are written in electronic images instead of ink or pencil?

Some will answer: The Internet is not the U.S. Postal Service. True, but the Internet was founded courtesy of the American taxpayer and the U.S. government. Furthermore, at the rate citizens are moving from conventional mail to electronic mail, it is reasonable to assume Internet mail will supplant U.S. mail as the dominant medium for sending and receiving correspondence.

Given this trend, by calling our letter "email" instead of "mail," and using a salutation of "Hi" instead of "Dear," does that relinquish our rights to seclusion? Why should this private space to ourselves and those to whom we send correspondence suddenly become space for everyone to share?

By changing the delivery mechanism for our message — from the postal service to the Internet — our envelopes can be opened and our letters

read. Not just by Uncle Sam's NSA. Not just by Google. Eventually, by anyone. Think about that idea for a minute or two, because that is where we are heading.

Last question, what has happened, in only 30 years or so, for our society to reach a point in which the CEO of Google states:

*... after privacy concerns were raised... Eric Schmidt, declared: "If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place."*

I place Mr. Schmidt's quote in bold type because his assertion is straight out of an Orwellian scenario. Eric Schmidt is the chief executive officer of the most powerful and influential Internet-based company on Earth.

He implies nothing is out of bounds to be examined: Your letter to your siblings about your parents' failing health; your debate with the IRS about your taxes; a credit card transaction; your "Dear John" to Joan; Joan's "Dear John" to you.

According to Schmidt, the Internet has altered the game. Cyberspace, because it is no longer a pen-and-ink world, renders our right to privacy irrelevant. After all, we have

nothing to hide. Nothing to hide except one of the most treasured aspects of our nature: Our privacy, our right to be left alone.

On the Aug. 24 program 60 Minutes, an Internet vendor said, "The Internet is an advertising medium." In fewer than three decades, the Internet has evolved from a network dedicated to the exchange of personal electronic mail and small files to one where this person declares it to be dedicated to selling various wares. How are these wares sold? By the sellers increasingly obtaining more-and-more personal information about you and me.

The second article in this series will offer some ideas on how to seal your electronic email envelope. The suggestions will not protect the privacy of the addresses on the outside of the envelope, nor will they necessarily stem the tide of Internet advertisements. But they will offer ways to protect the contents inside the envelope: our personal correspondence.

By the way, don't throw away your postage stamps. They may come in handy.

*Tomorrow: The conclusion, Have you been reading my mail?*

# Have you been reading my email?

**Editor's note:** This is part of an ongoing series for consumers about Internet issues.

By UYLESS BLACK  
Special to The Press

Monday I made the well-known claim that our Internet mail is not private. Our electronic letters can be read by anyone who has a smattering of knowledge about email.

Given that electronic mail is sup-

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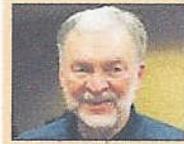
planting hardcopy mail, how can American citizens go about living our personal and professional lives under the cloud of having forsaken privacy? The Internet vendors tell us we should not be using the Internet if we have something to hide.

I disagree. Most of us use the Internet to exchange harmless, yet sometimes sensitive letters with our

loved ones and friends. They are often personal and private. If they are exposed, they will not do us under, but why should they be exposed in the first place?

The Internet vendors say our correspondence needs to be examined in order for their sales outlets to "profile" us — to find our tastes and distastes — for their targeted ads. Imagine! We have become

see BLACK, A5



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## BLACK from A1

marketing guinea pigs for Internet's Madison Avenue.

Perhaps this exposure of our personal life could be considered harmless. After all, why should we care if a health monitoring website learns we have recently been diagnosed with cancer, and we might be denied care or pay more for insurance? Why should we be concerned if neighbor Joe knows our spouse has left us and taken our credit cards in the process?

I wager I am a preacher talking to a concerned congregation, because I sense all of us care. The Internet was conceived as a network for personal communications, not as a network for commercial advertisements. I am not opposed to money-making billboards. One of my former companies was built around advertising, but I did not check out the religious, political, and sexual preferences of my advertising targets — as is being done today.

What can we do to gain back our privacy in a system that is rendering U.S. mail moot? In view of Facebook, YouTube, and LinkedIn onslaughts, how can we keep the valued American treasure of privacy intact?

Answer: We cannot. The gate has long been opened, and the Internet advertiser cows are in the pasture, feeding on the long grass of information about you and me.

In hindsight, the Internet email envelope should have been given the same sanctity as a U.S. mail envelope. But no one in the early times of the Internet (including this writer)

foresaw how the network would evolve.

### A Commercial and Social Problem

I doubt the clock will be rolled back to treat email with the same respect for privacy as regular mail. The lobbyists for keeping the Internet as an advertising and data-retrieving medium are too powerful for Washington to muster the political will to make amends, even if it had the constitutional authority to do so. Thus, unless the Supreme Court takes the matter into its hands, it is reasonable to predict that the Internet will evolve to a point where very little information is treated as private.

However, all is not lost. I conclude this article with some good news: simple actions which Internet end-users can perform to take back some of their privacy.

### Encrypting Email and Smartphone Traffic

These two articles have been devoted to a specific kind of Internet end-user traffic: email. This emphasis continues, but I interject the idea that similar privacy protection can be obtained with other traffic as well, such as voice traffic.

An Internet end-user does have an effective line of defense (as of this writing). The use of encryption applications (apps) allows the communicating parties to scramble (encrypt) their correspondence. Unless Uncle Sam or sophisticated hackers move to the next level of breaking the codes of these apps (which they are working on), our electronic mails can once again have their envelopes sealed. For example,

Google Message Encryption (GME) enables end-users to secure their email by using a Google security package.

To conclude this series, I take us one more step than what companies such as Google offer in protecting privacy. These systems protect our privacy while our email is in the Internet. They do not protect our privacy after the emails have been unscrambled and placed on our computer.

If we are concerned about the privacy of the files stored on our machine, it is a simple matter to use another package to scramble this data. In this way, this information will be known only to us and anyone with whom we wish to share the "key" to "unlock" this information. For example, the widely-used Microsoft WORD has an easy-to-use encryption option which allows a user to scramble any WORD document.

As mentioned, the same kinds of security packages are available to end-users who use smartphones. They, too have encryption packages.

If you are not using these security services, it can only be assumed you do not mind if others know about your written and spoken communications. On the other hand, if you do care but you continue to ignore them, you have abandoned Benjamin Franklin's advice: Be aware that distrust and caution are the parents of security — and privacy.

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# The Internet matters — to all of us

*First of three parts*

By UYLESS BLACK  
Special to The Press

To some, the Internet invokes visions of an information revolution, one that will eventually lead to unencumbered access to all that is known.

To others, the Internet is an awkward necessity, fostered upon pen-and-pencil writers who wish to stay in touch with their younger

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relatives.

For all, young and old, Internet experts as well as those unaware of its existence, the Internet has become an integral part of the lives of practically everyone and everything on Earth.

The Internet affects not only humans, but other living things, such as the Great Barrier Reef. In

trying to save the fragile organisms that build coral colonies, such as the coral polyps that have created this reef, organizations are using the Internet to coordinate their research and restoration efforts.

Why take care of far-away settlements in remote seas? What do they have to do with our lives on the mainland? Coral reefs are called the "rainforests of the sea."

see UYLESS, A3



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## UYLESS from A1

They provide a home to 25 percent of all marine life. These species provide food to other species such as tuna, which we humans take in as food. Protecting coral reefs is not just a "save a tree" endeavor. It is also a "save our food" undertaking, a significant part of Earth's food chain and a link to our well-being.

We have come to think of

the Internet as a settled part of our lives, supporting trivial pursuits such as Facebook. Other more serious activities have come to rely on the Internet, such as saving the coral polyp, a tiny organism that is refuge to one-fourth of ocean life.

The Internet is there at our asking. On occasion, we may lose a connection to the Internet. A temporary failure, it is usually a local connection problem, or the inability of our mobile device to obtain service from a wireless

provider. But the Internet itself has never failed. Its robust architecture keeps the world online almost all the time.

To cite another example of the importance of the Internet, daily newscasts describe how despots look for ways to deny their citizens' access to Internet service. The openness of the Net, as it is called, threatens the authoritarians' ability to control the lives of their subjects. The Internet is a reality, a vital part of human discourse. These rul-

ers treat it as an aberration.

In the long run, by shutting off their citizens' access to the Internet, these autocrats are denying their societies access to information, the wellspring of progress. By their actions, they decrease their citizens' prospects for exploiting the Internet's productivity engines. They assign their nations a significant handicap when competing against others for market share of the earth's products.

Whatever the products may

be — cars, transistors, food production, economic power — these short-sighted politicians are consigning future generations to an Internet information vacuum and an associated lower standard of living for their citizens.

The second part of this series will focus on why the Internet is revered by so many people. It will also explain why other people wish to change — and have begun changing — the character of the Internet.

# What the Internet champions, and threatens

*Second of three parts*

By ULYESS BLACK  
Special to The Press

What makes the Internet a champion to so many living things, even fragile coral reefs, but also a threat to despots?

What makes the Internet such a wonder is its egalitarian design. It was created to allow open, unrestricted access to all who use it. Unlike much human handiwork,

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which often has closed hierarchy, the Internet is open and classless, devised to treat all users as equals.

To understand this idea, called the "end-to-end" principle, consider the postal service. After an envelope is placed in a mail box, other than the destination address, no distinction is made about treating it differently from other envelopes. The mail personnel may sort the

envelopes by postal code for routing purposes, but no preferential treatment is based on addresses or the contents within the envelope.

As a consequence of this approach, the Internet is designed to be application agnostic. It does not matter if the Internet's electronic envelopes contain letters, photographs, spreadsheets, or video clips. It does not matter if an email is addressed to a party in the same

see UYLESS, A2



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city or in another country. Nor does it matter who these parties are, much to the chagrin of the despots, mentioned earlier. The design is intended for all traffic to receive the same treatment.

But this design is being questioned. While the end-to-end principle continues to be the prevalent way of treating Internet users' traffic, the precept is being challenged. In some situations, the end-to-end principle has been altered (less sanguine

critics use the word "violated"). Some enterprises which provide Internet services are treating certain "envelopes" differently from others.

How can this be? After all, how much information can a destination address on an Internet envelope provide about the contents inside the envelope? The answer is none — or at least very little. Certainly, the destination address reveals a location and identity of the party receiving the traffic, but not much else.

Rather than satisfying themselves with only relaying the traffic to the

destination, some organizations and individuals are opening the envelope and looking at its contents. In this way, they can examine the nature of the traffic and treat it according to the information inside the envelope.

With this change, the end-to-end principle no longer holds. As a consequence of the opening of the Internet envelope, and the huge industries which have come about and continue to grow because of this change (Google and the NSA, as examples), the future of the Internet is far from settled. The examination of the con-

tents inside the Internet envelope for purposes of preferential treatment, gathering of intelligence, and intrusion into privacy with targeted advertisements represents the casting away of the end-to-end principle.

Some say, "It's about time this change has come about. The end-to-end principle defies common sense." Others counter, "The abandonment of the end-to-end principle will represent the demise of privacy as we know it."

Is this assertion correct? We examine this claim in the third and last part of this series.

# No free lunch — and no free Internet?

Third of a three-part series

By UYLESS BLACK  
Special to The Press

The idea of a (relatively) free Internet and one in which all traffic is treated the same has come into question.

In the nation's capital, the Federal Communications Commission is considering how to deal with these concepts, collectively called the "end-to-end principle."

Critics of the end-to-end principle take another road, notably many of the Internet vendors — those who make a profit from looking at user traffic and perhaps gaining income from knowing about the contents inside the "envelope." Using the postal service analogy again, they say even the postal

service adds an additional fee for heavier envelopes, ones that contain more information.

The Internet vendors claim: Why should certain kinds of traffic which take up much of the capacity of the Internet not be charged according to what they use of the Internet's capacity? Someone has to pay for providing Internet services. Sending and receiving Internet traffic does not come about by magic. It is an expensive undertaking to provide these services. They make the claim: "All we are asking is a reasonable return on investment."

The counter-claim proponents hold that the abandonment of the end-to-end principle will spell the end to the most sig-

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nificant social, technical and economic invention of the past few decades: the egalitarian Internet. They say it will lead to the increased commercialization of the Internet, one in which the advertisers will gain control of what will appear on the screens of users' computers, tablets and mobile phones.

Sound familiar? In addition, by gaining access to the contents inside the Internet envelope, the supporters of the end-to-end principle state the dangers lie beyond mere commercialization. Unless other measures are taken to safeguard the Internet "text," the Internet will no longer be a private way to communicate. To cite a few examples: pranksters, the sensational press and

stalkers — not to mention government spy agencies — will be able to examine all traffic sent on the Internet.

This opening of the Internet envelope sits atop an iceberg. Resting below the surface of the iceberg lie the issues of privacy, security, quality of service and intrusive advertising, all of which are increasingly being provided or denied to Internet users. With the Internet destined to largely replace postal mail, these issues will have profound consequences for the world's private correspondence and public commerce. The future of the Internet in America rests on how the FCC, likely Congress, and inevitably the courts will determine the prospects for the Internet.

Other countries are involved in similar

debates. What might be the outcome of these deliberations? If the United States government imposes different rules on, for example, the end-to-end principle than the European Union (EU), how will the Internet adjust its vast inventories of hardware and software — which reflect massive cultural behavior patterns — to accommodate different philosophies? How will the Internet vendors and others with a stake in this issue adjust?

The findings and rulings of nations' governmental bodies will affect how we live our Internet-based lives. Their judgments will affect our future privacy and security. What they decree will affect the ownership of the very information we have about ourselves.

What they decide will go to the heart of the mat-



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ter: Who will control the Internet and the contents of the Internet envelopes?

The decisions of these bodies of power will affect how the future Internet will be used. The decisions will affect the human race. They will also affect those tiny organisms which provide a home to one-quarter of all marine life.

Upcoming Internet battle

# Obama's announcement

*Editor's note: Part one in a three-part series The Press will publish on Mondays.*

By UYLESS BLACK  
Special to The Press

Last week, President Obama urged the Federal Communications Commission to declare the Internet to be "open." He also said the

Internet should be a public utility, thus subject to more direct government oversight. Citizen or corporation, the commission's decisions will affect every Internet user.

The major channel providers for Internet traffic — those who own the wires and cables that run through America's neighborhoods — disagree with Obama's utility stand. For example, Comcast stated it support-

ed Obama's ideas on openness, but opposed making the Internet a utility. Another channel provider, AT&T, issued a strong statement opposing Obama's utility idea.

In contrast, many of the companies who use — but do not own — these wires and cables support Obama's declaration.

see UYLESS, A2



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## UYLESS from A1

For example, Netflix is reliant on Comcast, AT&T, Frontier, and other channel owners to provide the wires and cables (the digital highways) for sending movies to its customers. These content providers

— again, such as Netflix — are dependent for their very existence on the channel providers, the owners of the highways.

### An open Internet

What is an open Internet? Why is the subject making headlines? According to President Obama, an open Internet is one in which our emails and other traffic are not:

- Blocked or throttled: Our traffic is not slowed down or stopped.
- Treated differently: Our traffic is not examined for its content, such as an

email or a movie.

- Prioritized: Our traffic is not placed in front or behind other traffic because of who we are or how much we might pay for using the Internet.

How are the Internet companies doing in providing services to the American public? Are their fees reasonable? Do they offer capacity to support movies? Do they offer fast response time for interactive games? To answer these questions, consider these facts, based on a BBC/OECD study:

- Americans pay about 500 percent more than South Koreans do for Internet services.

- Americans pay about 150 percent more than the French do for Internet services.

- Americans pay about 140 percent more than the Slovenians do for Internet services.

If these facts unsettle you, consider further that these three countries' Internet users have access to about 200

percent more capacity than America's Internet users.

America, the creator of the Internet, is suffering from an errant parentage. What can be done to address the problems outlined in this article? A significant aspect of the issue revolves around the Internet becoming an entity whose performance and behavior is dictated by big business or big government.

How can ordinary users protect themselves from the motives and inclinations of these two often-contesting factions? Are the Internet overseers — both the regulators and the potentially regulated — looking after the interests of Internet users, their stockholders, or their political constituents? That is the subject of the next two pieces in this series.

References  
<http://www.bbc.com/news/magazine-24528383>  
BBC: British Broadcasting Corporation; OECD: Organisation for Economic Cooperation and Development.

Upcoming Internet battle

# Who owns the Internet's bandwidth?

*Editor's note: Part two in a three-part series The Press is publishing on Mondays.*

By UYLESS BLACK  
Special to The Press

Borrowing from an observation made by General George S. Patton during WWII, but in relation to the future of the Internet: "Grab 'em by

## News Analysis

their bandwidth (physical channels, such as wires and cables) and their text, emails, and files will follow." Unless the present trends change, those who gain control of the Internet's bandwidth will ultimately control the Internet.

For now and introduced in the

first part of this series, content providers, such as Netflix, Facebook, and Google are dependent on channel (bandwidth) providers, such as Comcast, Time Warner, AT&T and Verizon. To add to this mix, some channel providers are also content providers (selling a movie) as well as content creators (making a movie).

see UYLESS, A3



Uyless Black is an award-winning author who has written many books on computer software and advanced communication technologies. He was a software programmer for the Federal Reserve and a consulting business owner in California and Virginia. He resides in Coeur d'Alene.

## UYLESS

from A1

Consequently, these multifunction providers can favor their content (in this example, movies) over the content of their rivals.

For example, assume a company wishes to set up a channel devoted to the game of golf.

This channel would necessarily compete with the Golf Channel, which is owned by NBC. NBC is owned by Comcast. Conceptually, Comcast could favor its Golf Channel over this emerging rival. As well, it could favor NBC movies over those offered by Netflix. As a multi-function provider, Comcast has an inherent advantage over companies that offer content to end-users, but do not own the physical media over which they sell movies, interactive games, and

assorted aspects of life's diversions.

### Who Owns the Internet Bandwidth?

To assist in coming to grips with the bandwidth issue, let's review some facts about the Internet broadband marketplace in the United States, based on a survey from Time Magazine. The major players in the United States channel provider market are as follows:

#### Company Percentage of Market (total does not equal 100 percent, due to rounding):

- Comcast 24
- AT&T 17
- Time Warner 14
- Verizon 14
- CenturyLink 7
- Cox 5
- Charter 4
- CableVision 3
- Frontier 2
- Others 13

The physical media (wireless channels were not included in this survey) are provided by:

- Media Percentage of Market
- Relative Capacity
- Coaxial cable 60 Medium
- DSL (enhanced telephone lines) 32 Low
- Optical fiber 8 High
- The public watches video content with these devices:
- Devices Percentage of Market
- TV 69
- Computer 21
- Phone 6
- Tablet 4

### Competition

While there are a number of cable TV companies that compete in the marketplace, typically, only one is available in a neighborhood.

see UYLESS, A5

## UYLESS

from A3

The same holds true with the telephone DSL lines. Thus, there is no real competition on the local loop: Cable TV has a much higher capacity than DSL. Wireless Internet is inherently bandwidth-limited in relation to the costs to provide video and games. In the end, cable TV is the only consistently high capacity option for an Internet movie watcher or a game player.

Of course, optical fiber is of very high capacity, but its deployment is limited.

A channel provider has considerable freedom in what it charges a customer. The previous article substantiated this claim. Equally revealing, the large broadband channel providers are seeking to buy-out "rivals," which leads to yet more consolidation of power and increased leverage.

If a broadband carrier has a monopoly on the local loops running through a neighborhood what incentive does the carrier have to upgrade the loops' band-

width capacity? Customer satisfaction?

Consider these facts, introduced earlier:

- Americans are being charged one of the highest rates in the world for broadband access.
- While at the same time, Americans are being saddled with one of the lowest bandwidth services in the world.
- Americans are forced to subscribe to programs they will never watch; mostly infomercials; paying for something — scores of channels — that they do not watch.

#### Free Enterprise?

This model is not one representing free-enterprise, nor America's so-called capital model. I make these observations with regret. I come from the world of small business, one of forming three separate companies who did battle with those in the Fortune 500 to carve out a piece of the pie, however small. I value competition. It keeps me lean. It keeps the market lean. The Internet broadband marketplace is not lean. I offer this opinion based on experience, and exemplified in the third and last part to this series.

Upcoming Internet battle

# What to do with the Internet's bandwidth?

*Editor's note: Part three in a three-part series The Press is publishing on Mondays.*

By UYLESS BLACK  
Special to The Press

This piece wraps-up a three-part series on President Obama's recent speech about encouraging the FCC to fix the Internet, to keep the sys-

## News Analysis

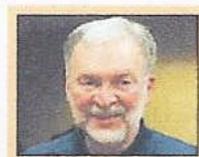
tem open, and not subject to traffic being treated differently. No one disagrees with this "open" philosophy. However, his additional comment about making the Internet a utility has come under fire.

I disagree with the idea of the Internet being a regulated utility. I

believe such an action will stifle creativity and competition. Whatever views we have, we must await the rulings of the FCC.

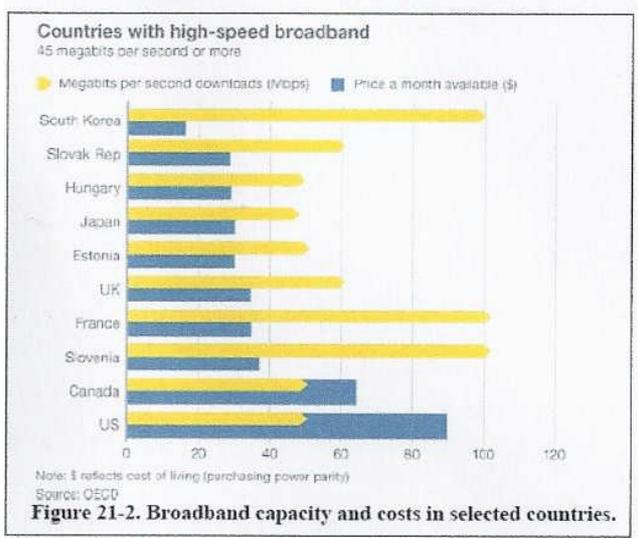
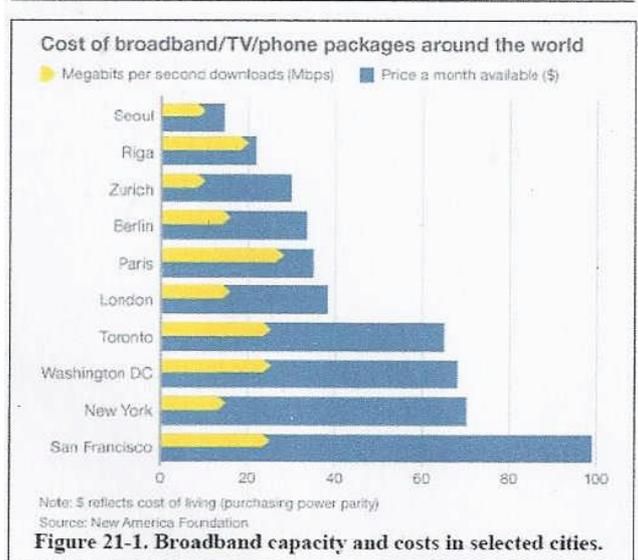
For now, I have based my comments in this series on a study by the British Broadcasting Corporation and the Organization for Economic Cooperation and Development (BBC/OECD).

see UYLESS, A4



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### From the front



## UYLESS

from A1

Parts of the study are shown in these two charts (shown above). The study confirms that America's Internet could use some "fixing."

Not everyone agrees that America's broadband Internet is in need of repair. The Wall Street Journal (Dec. 8, 2014) published an article titled "The U.S. Leads the World in Broadband."

I have been studying the Journal's assertions. I believe the performance of America's broadband Internet market is not of the quality as stated in the article. (For the details of my study, go to Blog.UylessBlack.com and click on "Studies on Internet Performance.")

### Present Models

Obama's additional declaration of making the Internet a public utility and subject to government regulation has met with considerable criticism. The Wall Street Journal carried these comments:

Randall Stephenson, the CEO of AT&T, said last week that he'll "pause" his company's build-out of fiber networks to carry high-speed to 100 or so cities. The reason: Uncertainty over whether the Federal Communications Commission will follow President Obama's public direction this week to regulate Internet service as a utility.

"We are now starting infrastructure

project that we don't have any clarity or line of sight, in terms of what rules those will be governed under," Mr. Stephenson said at an investment conference. "We have to pause, we have to just put a stop on those kinds of investments we are doing today."

It is not the Internet itself that is broken. It is doing fine. Consider the high-speed connections between Internet providers and the ingenious applications on the Internet. What is broken is the Internet's connection to the end user: the local loop running through our neighborhoods.

Nonetheless, we should not be dismissive of this local loop. It has served us well, and given its history, continues to do so. Frontier communications and others, with their Ma Bell legacy, cannot easily re-dig city streets. But times are changing. Here is why:

### Future Models

Almost all parties agree, "... the government should not try to regulate or dictate the prices that broadband companies charge for their services."

Then what can be done to increase performance in the American Internet local loop industry and bring down fees? Given that four companies control most of the wire-based local loop facilities in America, and given that their prices are unlikely to be regulated, more competition is needed.

see UYLESS, A5

## UYLESS

from A4

Content providers, such as Facebook and Google, have recognized their profits are dependent on having control of the physical channel on which to tout their wares. Thus, they are laying plans accordingly.

- Google Fiber will be up to 100 times faster than most of the local loop connections. The company has begun discussions with 34 cities around the United States to bring this capacity into business and residential sites.

- Facebook's Connectivity Lab is exploring the building of drones to deliver the Internet to, as Mark Zuckerberg says, "everyone." He states, "Our goal ... is to make affordable access to basic Internet services available to every person in the world."

- Google also has a drone program that will target the local loop market. It has purchased Titan Aerospace, a satellite-based company.

These plans will not come about in a rapid and innovative manner if government is policing the

Internet as a utility. The content providers, such as Google and Facebook, need to be given free-market incentives to put their visions into place. AT&T needs assurance its massive 100 cities plan will not be held up by Washington paperwork.

Competition for providing users Internet services is the answer, not Uncle Sam. But it should be noted that if the giants, Google and Facebook, gain control of the local loop, they too will have enormous leverage on our Internet connections.

What to do? If oligarchs emerge that exploit the Internet user, we can then call in Uncle Sam for remedy. But not now. Let's let the free market run its course. Let's let AT&T, Google, Frontier, Facebook and others face-off and see what emerges.

The current deliberations about the future of the Internet taking place at the FCC should be of great interest to Americans. The commission's decisions will affect every Internet user. Regardless of your stand, let your opinions be known to your congressional representatives in Washington.