

Verizon's Internet Gateway

For a shorter sharper introduction to this essay you can read [this](#).

It seems wrong for a service provider to block access to web sites or charge more for some sites than others. It's also wrong for a provider to tell me what routers and protocols I can use.

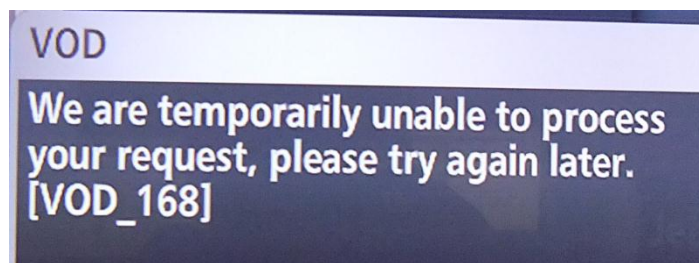
In the 1990's the carriers' plan was to bring a "fat pipe" into the home and use it to deliver its own services through a *residential gateway*. While at Microsoft I worked to assure that users could get unfettered access to raw Internet capabilities and not just the Web.

Verizon has brought back the residential gateway by only fully supporting services through the router they supply. It is an insidious violation of neutrality because it is an implicit part of their systems architecture rather than an explicit policy. As I explain in [FCC in Perspective](#) the Internet is more than the Web and Web protocols.

The limitations of Verizon's approach aren't immediately obvious because few people see the Internet as more than the web. I ran into the limits when I had to do what I normally do – take the initiative to solve real problems.

After I got Verizon FiOS my son started complaining that it didn't work with his online Xbox games. In trying to solve the problem a FiOS tech suggested that I just use my own router instead of Verizon's.

I recently upgraded my router and found that the Video on Demand service no longer worked right.



When I called Verizon for help I was told I had to use their router.

To understand why this is an issue we need to step back and understand how FiOS TV works. You can read about the [MocaAlliance](#) for details. It positions itself as the standard for "Home Entertainment Networking". "Cable" companies assume they know the purpose of the network and then [bake](#) that purpose into the architecture. Verizon may be a phone company but it's trying to restyle itself as Verizon's Internet Gateway/[Bob Frankston](#)

a "cable" company. I put "cable" in quotes the term is now used for the business model of delivering television content to subscribers.

With Comcast neutrality concerns arise because they manage their network for content delivery. Even if they play "fair" there is a structural bias. When the service reaches the home the Internet portion is distinct from the cable portion. You typically get an Ethernet jack and can connect your own router – wired or wireless.

Verizon is different because they use the Internet protocols themselves for the Video on Demand and depend on their router to stitch it all together connecting the segments of your home network – wireless, Ethernet and coaxial cable (RG-6) to their fiber network.

The Internet has become a fount of innovation because users get access to the raw capabilities of the Internet. It is important to understand "[Best Efforts](#)" and why we can create reliable services on unreliable substrate without depending upon promises, AKA, Quality of Services. More to the point there are no services to pay for.

Traditional telecommunications is about selling services – the layered dependencies. Thus the voice network – the PSTN or Public Switched Telephone Network reserves a path before you can place a phone call. Even as voice traffic is moving over IP many of those in the traditional telephony world believe that VoIP only works because of special facilities built into the network.

It's not just that innovation is limited to what the carriers can imagine. The carriers have no reason to challenge their need to believe that their meddling is necessary.

Indeed without being forced to solve problems outside the network it would be difficult to convince people that VoIP could work. And it didn't work until the Web gave us a reason to provide enough capacity to support VoIP.

Verizon controls every aspect of their MOCA implementation so they don't need to be disciplined in separating transport from services. The remote DVR and other services depend on using the Verizon router even though others are able to offer similar services through just about any router.

Verizon doesn't provide documentation on its protocols so I don't know if there was a way to work around this problem. After all, these are considered internal engineering

decisions and Verizon considers my home network to be its home network.

One feature of the router I bought was the ability to connect to two providers at once (Verizon and Comcast in my case). I could increase my resilience and capacity by connecting to both Verizon and Comcast at the same time. But this broke VoD because Verizon implicitly assumed that it had a direct connection to its own servers.

The idea of a Verizon gateway starts to unwind one of the important side-effects of ATT's 1984 divestiture that gave us ownership of the wires within our homes. It also gives Verizon the ability to poach the coax that Comcast spent money to install in my house. How convenient.

When I recently upgraded my router I found that I could only do Video on Demand on one set top box (STB) at a time. I looked through the diagnostic screens on the STBs and didn't see any obvious problem so I called Verizon support and was told flatly that I couldn't use a third party router.

This didn't make sense so I did a reality check by contacting a senior exec at Verizon. He asked for a few days but I'm not surprised that he hasn't gotten any official policy because the layered dependencies are so implicit. I also spoke to one of the FiOS technical people at CES and again there was a lack of awareness that one would use the Internet in ways Verizon hadn't planned.

My own router has capabilities that indeed Verizon doesn't offer. It allows me to create a private connection to my home router from anywhere in the world. This isn't a luxury. When I travel in China it enables me to gain full Internet access despite the "Great Firewall of China". It also allows me to access my email from a hotel in the US.

The router also supports the new [IPv6](#) protocol – I don't need to wait for Verizon to get the benefits and discover the possibilities.

We see another example of the return to the 1990's in the new home control services Verizon wants to provide. It returns our homes to the carriers' comfort zone of billable services. If I want to use these services I have to accept their residential gateway and their view of the Internet.

I'm willing to accept the idea that Comcast and Verizon have the best intentions but they are misguided. The Internet undermines their business model because we create our own services using the basic packet-carrying facilities and don't depend on anything beyond "best efforts". By baking in content delivery they are undermining the generative dynamic of the Internet.

The lack of documentation, in effect, cripples my ability to use the Internet because I'm at the mercy of their complacent engineering decisions. This isn't very different from Comcast trying to block Bit Torrent traffic without telling anyone.

In the near term the Broadband Internet Technical Advisory Group ([BITAG](#)) should treat these engineering decisions as a violation of neutrality in the same way that Comcast is prohibited from favoring their applications. Perhaps even an extreme violation of neutrality because the router acts as a gatekeeper. But can BITAG address issue beyond a narrow definition of a "[Broadband Internet](#)"?

As long as we treat this only as a technical issue within the world of telecommunications we can't address the deeper problem of well-intentioned engineering decisions that are inherently non-neutral. We must recognize that the real problem is that these dependencies go to the heart the very concept of telecommunications.

As I wrote in "[demystifying networking](#)" we can indeed decouple the services from the transport and apply an appropriate business model to each.

Not only is this necessary public policy it also helps protect the carriers from the problems due to sloppy engineering. If Verizon is forced to decouple its services from the particulars of its transport it becomes stronger and can offer services to all.

We see this clearly in Comcast's acquisition of [NBCU](#). They must offer the NBCU content to all subscribers, not just Comcast customers. And they can because they don't depend on having their own network.

While Comcast is shifting its assets into NBCU, Verizon seems to be digging itself deeper into its comfort zone of layered dependencies and billable services despite past failures such as 900 numbers.

This new landscape is a challenge because the customer is no longer captive. That's scary to a service provider but it's no excuse for engineering practices that limit customer choice and innovation. It's also about the economy – it's difficult for entrepreneurs to create new value if Verizon decides what is and isn't allowed.