

# Maximizing your Internet connection

## CASE STUDY

### Affordable bandwidth to help spur growth

**SITUATION** When Steve Olvera took over IT at Hospice of Spokane in Spokane, WA, he immediately saw some opportunities for improvement. "When I first started, we were on dial-up," he remembers. But although they'd done well to that point, Steve knew that they needed more bandwidth to grow.

His first step was assessing their bandwidth needs; they outsource their Web hosting, so Web traffic wasn't an issue. And internal use by approximately 15-20 employees was mostly limited to email and Internet access. While conventional wisdom might suggest a T1 Internet connection for a business of that size, Steve found that he could get great performance with simple DSL. "We're in downtown, so we can get the full 7Mbps performance," he explains. "And we don't do a lot of uploading, so a connection that sends data in one direction puts

that bandwidth where we need it — on downloads."

**RESULT** Today, Hospice of Spokane has grown to about 100 employees with 30-40 in-office staff, but Steve is still quite happy with their DSL service, "Our experience with DSL has been very good." And their current connection now also supports streaming audio and video, Web conferences and Internet radio, as well as two full-time remote users and clinicians in the field connecting via VPN.

Steve is now looking at how to accommodate their expanding bandwidth needs while keeping costs down. "Probably our next step is to bond two DSL lines," he estimates. "That should let us double our speed but will still be cheaper than T1." In the meantime, Steve has been pleased with his choice of a DSL connection, "I've been very happy."

Photo source: Veer® stock photos.

Photo does not represent Mr. Steve Olvera, Hospice of Spokane or any related associates or products.



# Paper or plastic? Your Internet connection choices

The array of connection options can be as confusing as a jumble of cables. And which to choose depends on a number of factors, including the type and size of your business, where you're located, and more. Here's a primer on what's out there and what they mean.

## DSL (Digital Subscriber Line)

An "always-on" connection, carried either through phone lines or fiber-optic lines. Usually the first thing people think of when considering a high-speed connection.

**Pros:** It's fast, reliable, and offers good security.

**Cons:** Performance suffers the farther you are from your provider.

## Cable Internet

Delivered by a cable provider and carried through cables to the local distribution hub. Considered by some to be faster than DSL, but the disparity has all but vanished. And because most providers share a single line among blocks of subscribers, performance can bog down during peak usage.

**Pros:** "Always-on," potentially very fast connection.

**Cons:** Slows during peak usage. Potential security concerns result from a shared line.

**Average cost of broadband access  
in the U.S. in 2009: \$3.33/Mbps**

— Source: October 2009 Information  
Technology & Innovation Foundation  
Broadband Rankings

## Satellite

A great option for businesses that lie outside DSL or cable provider areas. Carried through dish antennas and satellites. Speeds are comparable to DSL/cable, but they often require subscription contracts and carry upfront installation and setup costs.

**Pros:** Makes high-speed Internet accessible to virtually anyone.

**Cons:** Often more expensive than DSL/cable and susceptible to weather conditions.

## ATM/Frame

Another type of "always-on" connection, ATM/Frame is a good choice when your business requires Internet services that consistently perform at peak levels to support: a WAN, telecommuting employees or remote offices, large email or file transfer requirements or large, multi-user Internet applications.

**Pros:** Reliable high-speed connection with good quality of service (QoS).

**Cons:** More expensive than other high-bandwidth connections.

## T1

The next level of Internet connectivity, the "leased line" is a dedicated connection from your business to the provider, with guaranteed bandwidth and uptime, and more consistent performance. T1 is the basis of an integrated access solution which includes the sharing of data and voice. With T1 you will get 24 phone lines at the speed of 1.544 megabits per second or any combination of that setup. Pricier than DSL/cable, but a must for growing companies or small businesses with higher bandwidth needs.

**Pros:** Gives growing businesses access to a direct, high-bandwidth connection. Works well for connections between cities that are spread out.

**Cons:** Significantly more expensive than DSL/cable.

## Fractional T1

This allows two or more smaller businesses to effectively split a T1 connection between them, delivering the bandwidth benefits with lower cost than going it alone. It can be used interchangeably for voice and/or data.

**Pros:** Consistent bandwidth at a more affordable cost for smaller businesses.

**Cons:** One or more of the businesses can outgrow the shared connection.

## Metro Ethernet

A computer network that covers a metropolitan area. More cost-effective, reliable, and scalable than proprietary networks, Metro Ethernet can connect business local area networks (LANs) to a wide area network (WAN) or to the Internet. A LAN is a computer network covering a small physical area, like a home, office or small groups of buildings, such as a school or an airport. A WAN on the other hand is a computer network that covers a broad area, like any network whose communications links cross metropolitan, regional, or national boundaries.

**Pros:** Dedicated high-speed connection at relatively low cost.

**Cons:** Significantly more expensive than DSL/cable.

## T3

The next step up from T1, a T3 leased line is a fiber-optic connection that delivers 45Mbps, great for larger businesses or those with higher bandwidth needs such as for transferring video files or enabling high-capacity on-premise Web hosting.

**Pros:** A dedicated high-bandwidth connection.

**Cons:** More expensive than some small businesses can afford.

## PRI (Primary Rate Interface) TI

PRI lines enable reliable, high-speed, high-capacity digital connectivity as well as intelligent call handling and caller ID functionality. Typically recommended if you have a large number of phone lines and a high-speed Internet connection.

**Pros:** High-capacity connectivity and advanced calling function.

**Cons:** Added cost and complexity to your network.

# Five reasons to upgrade your connection

1. **Cloud computing** — flexibility to work from any location and not just your PC.
2. **Offsite backup** — automate online backup from every computer.
3. **Better collaboration** — video conferencing, online document sharing, and more.
4. **VoIP** — voice service over an Internet connection.
5. **More efficient workflow** — smoother information sharing, file transfer, and more.

## Related Guides

Harnessing Internet-based computing

Managing data storage

Selecting the right email system for your business

Connecting inside the office

Connecting outside the office

For more detailed information about maximizing your Internet connection, please refer to the accompanying white paper on this topic.

## Decision time: which one is right for you?

When considering your broadband options, it's usually best to start simple. First, answer some basic questions:

- How big is your business? 2 people? 15 people? 50?
- Where are you located? Are you in or near a big city or in a rural area?
- What kind of business do you have? Remember, an insurance agency will have very different broadband needs from a landscaper.

For some, the answers to these questions may make the decision. But for many, it's just the beginning. The next question is...

### Bandwidth: the million dollar question

Try to determine what sort of bandwidth your business will need now and in the near future. This will be affected by things like:

- Hiring more staff
- Cloud computing
- IP telephony (Voice over IP - VoIP)
- Media streaming
- Upload vs. download needs
- Remote workers
- Customer needs

Having a clear picture of your technology needs is important in making sure you choose an Internet access plan that's right for where you are now, and one that will grow as your business does.

### Your provider matters

When selecting an Internet Service Provider (ISP), be sure to check if they own their own Internet "backbone," or a server with a direct connection to the Internet. These providers are known as "Tier 1" providers. Providers who don't own a backbone must lease lines from Tier 1 providers, which means your data must travel through multiple servers

before reaching the Internet. This increases latency and slows down your connection.

It's also important that you understand the bundles the different providers offer. Compare them apples-to-apples with other bundles. And it could be a good idea to find out if other reputable companies use the ISP, as this could indicate how reliable their service is.

## Hook it up: connecting your business to the Internet

Whichever provider you choose, take a close look at the Service Level Agreement (SLA). And to avoid surprises, ask them about:

- Equipment or setup costs
- Whether onsite technical support is included
- Length of contract
- Equipment maintenance and upgrades

If you have the in-house technical expertise to handle setup, it's even easier. But if not, you don't have to do it alone. Your ISP will often provide assistance, or you can look to an outside consultant.

## 1.5 what?

### Understanding speed statistics

*When shopping for your Internet connection, you may wonder what the numbers mean (e.g., 1.5 Megabytes per second/128 kilobytes per second). These numbers are the maximum download/upload speed (respectively) you can expect from a provider as measured in bits per second. For example, an email with 7,000 plain text words takes approximately 75kb to send.*



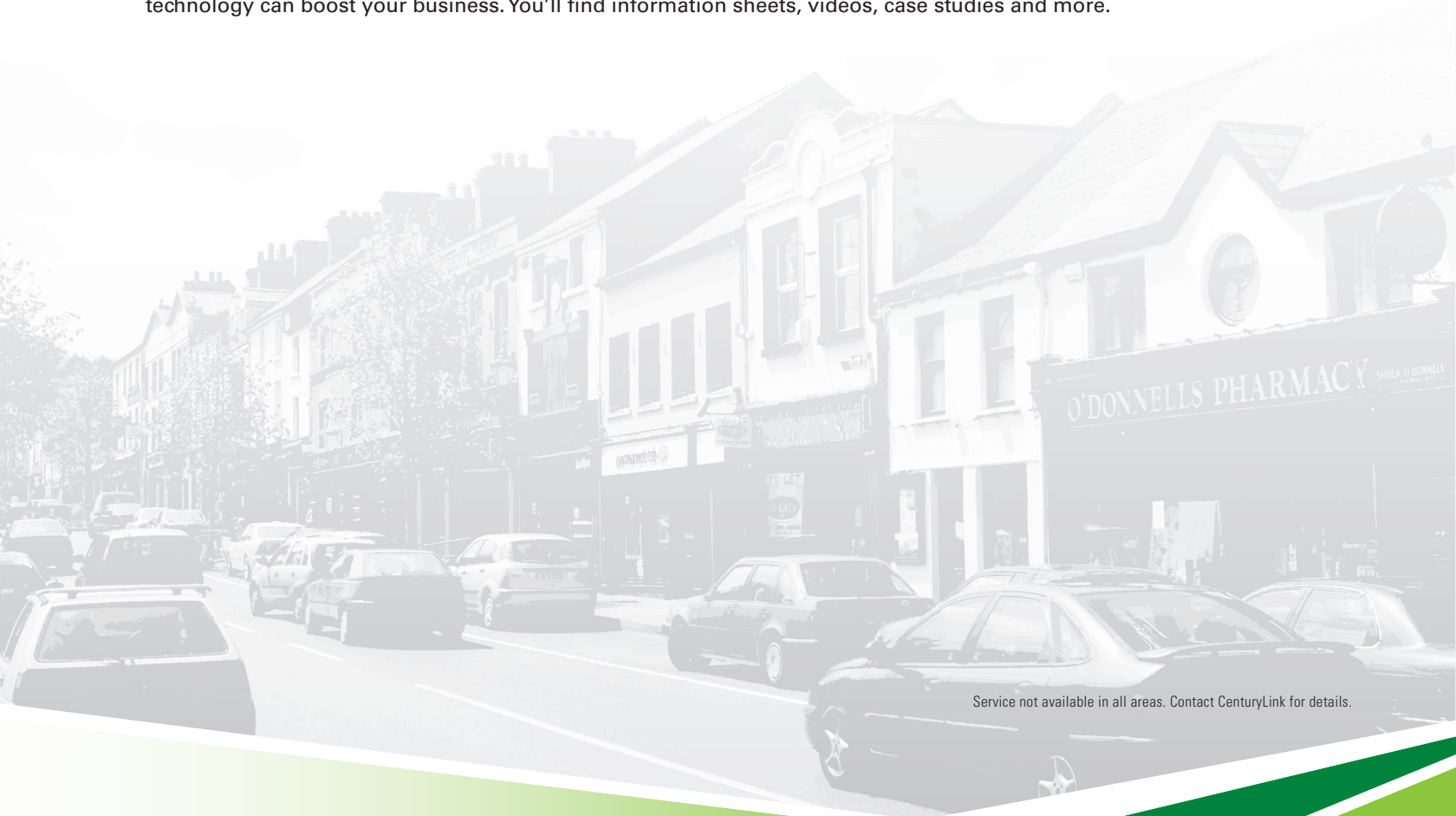
## Don't have an in-house IT department?

*No problem. Most Internet Service Providers (ISPs) will provide equipment and maintain it as part of your service plan.*

## Need more? We're with you.

Your community representative is always happy to help. You can count on them as a resource for compliance solutions to consider that fit your specific business needs, budget and level of expertise, as well as advice and resources on a range of small business technology issues.

Visit <http://centurylink.com/smb-resources> to contact your community representative, and learn more about how technology can boost your business. You'll find information sheets, videos, case studies and more.



Service not available in all areas. Contact CenturyLink for details.



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