8 GREAT REASONS CUSTOMERS SHOULD GO BIG ON BANDWIDTH

By Russ White

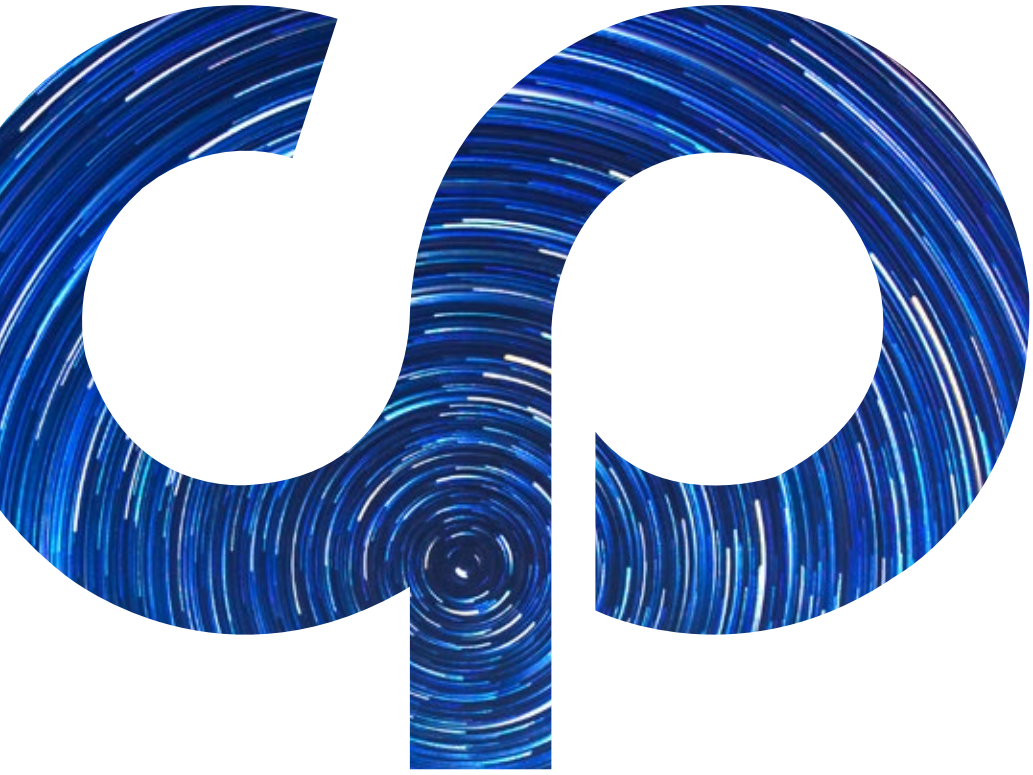

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TABLE OF CONTENTS

1. Video Conferencing. 5

2. Improve Remote Access Speeds and Productivity. 6

3. Streaming Education and Training Services. . . 7

4. Give Your Retail Customers (Better) Free Internet Access 7

5. Give Your Guests (Better) Free Internet Access . 8

6. Bump up Your Cloud Access 9

7. Improve Your SD-WAN Service. 9

8. Simplify Your Quality of Service (QoS) Configurations 9

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ABOUT THE AUTHOR

RUSS WHITE is a widely known speaker and author who has worked in the networking industry for more than 20 years. He has spoken at venues such as Cisco Live, NANOG, LACNOG and Interop, been active in the IETF and ISOC, and co-authored 10 books on networking technology. He holds a master's degree in networking technologies from Capella University and a master's degree in Christian literature, CCIE 2635, CCDE 2007:001 and the CCAr.

linkedin.com/in/riw777
@rtggeek

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Businesses often underplay the importance of high-speed wide-area connectivity, whether those links are on-ramps to the global Internet or to the corporate network. The primary reason for not buying more bandwidth is simple: It's expensive. But there's more than one way to look at cost — what's it worth to make remote workers significantly more productive or to wow customers and guests with fast and secure wireless access?

Before we jump into eight use cases that will help you make the sale, let's run down the connection between bandwidth and transferring data across a link. It may seem fundamental, but being able to do the math for a customer is important. You are asking them to shell out more every month.

The first point to note is that bandwidth directly impacts the rate at which employees, guests or customers can transfer a file. In fact, you can calculate the minimum amount of time it will take to transfer a file by converting the file size into the same units as the link size (Mbps or Gbps) and simply dividing the link size into the file size. For instance, if you have a 5GB file to transfer over a 2Mbps link, you can:

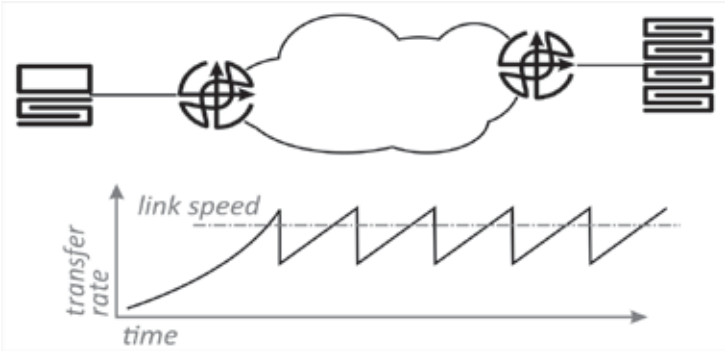
- Multiply 5GB by 1024 to express the file size in megabits — this is 5,120 megabits. Times that by 8 bits/byte and you end up with 40,960 megabits.
- Divide that megabits by the link size, which is 2Mbps (roughly — it's actually 2.048Mbps)
- The result is around 333.5 minutes, or 5.5 hours.

This rough calculation, though, is the best-case scenario. There are several other factors to consider, because outside factors are going to slow this file transfer down.

First, most traffic is carried over TCP, which "plays nice" with the network by slowing down in response to congestion by using a windowed flow control process. When congestion is encountered on the network (generally indicated by a dropped packet), TCP scales back its transmission rate for the file, then slowly increases it again, searching for the optimal transmission rate over this particular path. The figure below illustrates this process.

Time vs. TCP Link Utilization

There's no such thing as a smooth transmission over TCP — depending on traffic levels, slowdowns may add significant delay.



Source: Channel Partners

The point at which TCP "caps out" and begins the next cycle of optimum bandwidth discovery depends on many factors, including the depth of the packet buffers (queues) along the path, the number of other TCP streams being carried over the same length, quality-of-service settings for this particular stream of packets, and — finally — bandwidth. In general, however, you're never going to see traffic transfer at a rate that's equal to the promised link speed. There are too many factors at play.

Now that you can run some numbers and set the reality for customers, let's consider some selling points for upgrading the bandwidth to their sites. Each of these ideas is connected to a specific application or part of network operation — and ultimately to the business' bottom line.

1. VIDEO CONFERENCING

If you haven't sold customers a video conferencing system, either standalone or part of a full unified communications package, they're missing out on a very effective way to increase productivity and reduce costs. Consider, for instance, the problem of bringing an expert in a particular field into an office for a live presentation on market direction, hiring a consultant to help resolve a particular problem or even getting an internal expert to help out with a problem in another office. Instead of taking up several days of the expert's time and paying them to travel — both expensive propositions — the customer can set up a video conference instead.

Or consider the executive who really needs to be at the all-hands meeting to explain a major realignment in the organization's structure, but who also needs to be at a customer site explaining the future of a particular product line. Can't be in two places at once? Video conferencing.

Video conferencing systems are also one of the more effective ways of integrating remote partners and workers more fully into the company culture — adding this capability may even allow a customer to start down the path of setting up a telecommuting program, a powerful hiring and retention tool. According to a study by Global Workplace Analytics, telecommuting grew by 103 percent between 2005 and 2014. The reasons for this growth are numerous, but they generally revolve around hiring the right expertise and reducing local building expenses. Allowing part-time remote work can improve your changes of keeping top-flight talent on board, and remote workers with solid video conferencing support need to travel to HQ much less often, reducing downtime and expenses.

Of course, video conferencing systems can require a lot of bandwidth — making installing one a great reason to sell upgraded connectivity. In the past, in fact, the cost or unavailability of sufficient bandwidth may have been what kept customers from spending on UC. Now, with more affordable fiber options, you could get a two-fer.

Check Your Speed

Not sure how fast a given end user's access is? Comcast Business offers an Internet Speed Test that measures the time to send and receive a file, as well as latency.

2. IMPROVE REMOTE ACCESS SPEEDS AND PRODUCTIVITY

Remote workers don't need just video, though. There's nothing more frustrating than being given remote access to internal Web pages, applications and systems, and finding they run so slowly that you're not as effective at home or in a remote office, as you are in the "real" office. This applies not only to remote workers but executives and top individual contributors who spend at least part of their time at industry conferences, customer sites and other locations.

Consider this customer situation: A key engineer is at a conference to present a new concept to press, customers and partners. Management has reviewed the presentation and made changes to prevent eating the revenue stream of a forthcoming product. How do you get the 5GB PowerPoint to the engineer? If management holds true to form, email is the default answer, and the changes are not approved until minutes before the session. But if your local connection is 2Mbps, it's going to take hours (see above), at best, to get the file out to the engineer. Now, most SMBs do better than 2Mbps, but the slower the link, the longer the engineer is biting his fingernails hoping to get the file before the presentation starts.

Trust us, at some point your customer's IT manager has been chewed out because of sluggish remote performance, whether the end user knew the reason or not. If it happens regularly, it's time for a discussion on increasing the speed of their Internet connection.

3. STREAMING EDUCATION AND TRAINING SERVICES

Next to building up a solid infrastructure that supports telecommuting, training is one of the prime ways customers can improve talent retention. It's also indispensable to onboarding new employees. Books, however, are rapidly being replaced as the preferred means of learning by streaming video courses. Services such as Lynda and InformIT offer streaming video courses across a wide array of topics, and we're sure you have customers that bring on new employees in the most inefficient way possible, burning supervisor staff time going over tasks that could be taught with video.

In addition, colleges distribute their classes through streaming services in Massive Online Open Course (MOOC) systems. MOOCs are growing larger every year in terms of offerings and students, and they have the potential to offer employees a solid way to build their careers, as well as potentially replacing internal training on more generic topics within a particular specialty or career field.

Slow Commotion

When a customer uses cloud over the Internet, reliability needs to be a discussion point. Most ISPs and some cloud providers offer tools to help you proactively monitor customers' application performance.

Classes range from Programming Basics, self-paced, to an MIT course on "How to Launch a Technology Company in 6 Steps." The range is amazing. But it's difficult to take advantage of these widely available options with an Internet connection that won't scale to even several users streaming video at once. Increasing bandwidth, then, can increase the customer's opportunity to grow its people, and in turn grow its business.

4. GIVE YOUR RETAIL CUSTOMERS (BETTER) FREE INTERNET ACCESS

Giving your guests free Internet access — or improved free Internet access — might seem like an expense without an upside. Why should you pay more for something that may just let a shopper "showroom" and then buy from Amazon?

If you're in retail, your shoppers will remember you're the one place they can get great access, and they'll prefer your store. This is a formula that has worked for coffee shops; why not other retail locations? How many frustrated parents would find it more pleasant to shop in a store where their children can keep occupied on a mobile device?

And trust us — giving guests the ability to comparison shop on-premises can show them your confidence in your prices and services. They're going to do it anyway. Small, neighborhood retailers can win by providing personalized, five-star service.

Saturation Point

Typical bandwidth demand for common applications shows a 2Mbps, or even a 10Mbps, can be gobbled up quickly.

APPLICATION BY USE CASE	NOMINAL THROUGHPUT
WEB - CASUAL	500 kilobits per second (Kbps)
WEB - INSTRUCTIONAL	1 Megabit per second (Mbps)
AUDIO - CAUSAL	100Kbps
AUDIO - INSTRUCTIONAL	1Mbps
ON-DEMAND OR STREAMING VIDEO- CAUSAL	1Mbps
ON-DEMAND OR STREAMING VIDEO- INSTRUCTIONAL	2-4Mpbs
PRINTING	1Mpbs
FILE SHARING - CAUSAL	1Mpbs
FILE SHARING - INSTRUCTIONAL	2-8Mbps
ONLINE TESTING	2-4Mbps
DEVICE BACKUPS	10-50Mbps

Source: Netgear

Today, that includes high-quality Wi-Fi. We explain exactly how to set up a solid wireless network to support customer requirements and new mobile apps in this report, aimed at hospitality but relevant to retail and other verticals.

5. GIVE YOUR GUESTS (BETTER) FREE INTERNET ACCESS

You don't sell to retail, so you think customers don't care about faster and more secure guest access?

Before you jump to conclusions, consider this: All companies run on talent. The way to get top talent is to show candidates a great working environment starting from the first day they walk in for an interview. Capable guest Internet access can impress candidates with your customer's desire to build a workplace that works for everyone — and this can be an important factor in that star deciding where to hang her hat. This is especially important for Millennials, who see Wi-Fi as a right, up there with clean air and fancy coffee.

But your customer's recruiting staff won't be the only ones who thank you for a higher bandwidth Internet connection; contractors that come on-site to work on specific projects, or to resolve specific problems, will benefit as well. It makes no sense to spend a lot of money on an outside consultant only to have him sitting in an office or cubicle spending his time looking through documentation on a slow network connection.

In addition, it's a security best practice to carve out a WLAN segment for guests/contractors, and that demands enough bandwidth to set aside capacity for both sides of the link. By doing this, you ensure sufficient throughput for both internal traffic and secure guest Internet use.

6. BUMP UP YOUR CLOUD ACCESS

Plenty of businesses run on the cloud now or are moving in that direction. Selling cloud services is also the future for agents that want to build monthly recurring revenue streams. However, nothing will kill a SaaS or IaaS hosting project faster than too little bandwidth. Selling a cloud-based productivity tool without properly sizing Internet links is a sure way to lose business.

While cloud is a great idea for many applications, you still need to get information into the cloud, and then back out again. In fact, you need to get a lot of information into the cloud and back out again. Just a couple of examples:

If you run backups for servers or individual computers to the cloud, they are certainly going to be larger than 5GB each. Each individual device can take hours to back up to a cloud service; wouldn't it be better to also sell customers faster link speeds and make such large transfers happen more efficiently?

Workflow applications often require transferring large files from one person to another. Even if each employee is just opening a large file from a cloud-based application, the data in the file still needs to be transferred to each user who opens the file. This sort of work needs a higher-bandwidth link.

While we're not huge fans of fuzzy "productivity improvements" in TCO analysis, bigger pipes could improve customers' workflows markedly.

7. IMPROVE YOUR SD-WAN SERVICE

Software-defined WANs (SD-WANs) are the new wave in wide area links — but as magical as they might seem, they still can't make bandwidth appear out of thin air. While SD-WAN solutions can improve the efficiency of bandwidth usage, such services will almost always run better with a properly sized link to the Internet.

We cover SD-WANs in depth in this report. Bottom line, perhaps the weakest link in any SD-WAN is Internet connectivity. It's important to remember that SD-WAN overlays are just that — overlays — and cannot create bandwidth out of thin air.

8. SIMPLIFY YOUR QUALITY OF SERVICE (QOS) CONFIGURATIONS

In the networking world there's an old saying: QoS is for people who are too cheap to buy enough bandwidth. While a bit tongue-in-cheek, there is some truth in there as well. Complex QoS configurations are difficult to manage and troubleshoot even for one network. For partners supporting multiple customers, this can become a major time suck. There is a definite tradeoff in the human costs required to maintain

such policies and the cost of increasing the bandwidth on the customer links on which QoS is configured. Increasing link bandwidth might allow you to simplify QoS configurations, ultimately saving you operational expenses.

While low-bandwidth links might seem like a bargain, they're often costing customers more than they know. Just because the costs are hidden doesn't mean they don't exist.

Partners need to take a close look at the wide area link options on their rate cards. Why not explore new connectivity options and ask: Is it time to upgrade your bandwidth?