

Charter Business®: White paper

# Fiber or Coaxial: Which one is best for your business?

Both technologies reliably transmit at high data rates, but present different advantages for your business

## WHITE PAPER

Your communications and computing network is critical to the success of your business, and the right Internet connections are more critical than ever. Bandwidth demands by both your internal users and customers are exploding. In fact, a recent Cisco study predicts that IP traffic will grow at a compound annual growth rate (CAGR) of 29 percent from 2011 to 2016<sup>1</sup>. Cloud-based business applications, larger file sizes, burgeoning databases, mobile apps, wireless connectivity are all contributing to the increase in network demand.

This unprecedented growth is putting more and more pressure on companies like yours to protect against costly downtime and to escalate your efforts to continually improve customer experience. But your business, while similar to your competitors, ultimately presents a unique set of challenges and requirements. So it's important that you choose the right networking solution for your needs.

There are a number of networking options, and they are constantly evolving. Older, slower DSL (digital subscriber line)-based services are giving way to faster, IP-centric cable and optical Internet options. Advancements in cable-based technologies and wider availability offer businesses like yours higher transmission data rates that present less error and latency, and fiber-based solutions present



an alternative to companies that need even faster, symmetric broadband connection services.

With so many network options, choosing the right solution for your business can be tricky. Charter Business offers reliable, flexible solution sets based on coaxial or fiber-optic cable, both of which carry information between computers, servers, network hubs, televisions, radios and telephones. Both technologies present advantages, so your unique business needs will ultimately drive the choice.

<sup>1</sup>Cisco Visual Networking Index: Forecast and Methodology, 2011-2016, May 30 2012

## Fiber Optic Cable

Fiber-optic cable, which is built around a glass or silica core, can transmit more data much more quickly and over longer distances than conventional copper lines or DSL. Data is transmitted through the fiber in the form of light at remarkable speeds. Fiber-optic cables often contain several silica cores, and each fiber can accommodate many wavelengths (or channels), allowing fiber to accommodate ever-increasing data capacity requirements.

Because the conductor is glass, which does not generate ambient electricity, fiber is immune to electromagnetic, radio or other sorts of transmission interference. Fiber is a fairly recent innovation introduced within the past 40 years, so while it is popular, it's not as ubiquitous as coaxial cable. Generally more expensive to install and operate than coaxial cable, fiber offers distinct advantages for businesses with high-volume, digital data networking needs.

Fiber networks can provide dedicated access to the Internet with synchronous transfer, meaning that you will get the same speed for uploads or downloads. This can be important if your business requires fast and secure transfer of large amounts of data in both directions, such as video, medical images or rapid financial transactions. And because fiber networks reduce signal degradation that can occur in copper or coaxial cable networks, fiber is also good for large campus environments or for companies with several branch offices.

Fiber networks are also reliable and scalable. Fiber services from providers like Charter Business are backed by strong service level agreements (SLAs) that guarantee uptime\*. These networks are also equipped to grow with each customer's demand, from 10 Mbps up to 1 Gbps, with no additional equipment or installation, and up to 10Gbps with minor equipment upgrades.

## Why fiber?

The biggest advantage to a fiber network is the amount of data it can transmit without interference over very long distances. Though more expensive than coaxial cable, fiber has more capacity and supports equally fast upload and download speeds, and supports lower latency and loss, which are often requirements for certain applications.

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### FIBER ADVANTAGES

#### Flexibility

Bandwidth can be increased in increments, so you pay only for what you need.

#### Capacity

High-speed transfer and scalable bandwidth easily support virtual work groups or communications with suppliers, vendors and customers.

#### Reliability

Your network uptime is guaranteed by SLAs\*.

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### FIBER IS BEST FOR

- + Businesses with higher bandwidth needs, such as uploading or downloading large files, or running bandwidth-intensive cloud-based applications
  - + Businesses with several branch locations
    - + Health services organizations
    - + Financial traders or banks
    - + Educational organizations
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## Coaxial Cable

Coaxial cable is a mature technology that has been in common use since the start of the 20th century. Coax offers such resilience and quality that it has been more or less unchallenged since it was introduced. Coax cables comprise copper cores that are surrounded by a dielectric insulator, then a woven copper shield, and finally a plastic covering. This shielded design that allows the copper core to transmit data quickly, without interference or damage from environment factors.

Initially used by the military and for telephone service, coax came into common consumer usage through cable television. However, as the Internet became more widely available and important to businesses, coax became the de facto standard for computer and communication networks because of its resilience and comparatively high bandwidth. Unlike DSL, transmission quality of a hybrid fiber-coax network is less impacted by distance, so you can count on reliable speeds.

Coax data transfer is asynchronous, which makes it a good choice for companies that rely on a large amount of incoming data, but may have less bandwidth-intensive outgoing data. Both download and upload speeds are several times faster than DSL\*\*. Charter Business coax solutions include the following:

- + **100 Mbps download, 5 Mbps upload**
- + **Desktop security**
- + **Web hosting**
- + **Dynamic and static IP addresses**

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## COAX ADVANTAGES

### Resilience

Your network is hardened against negative environmental impacts.

### Value

Coax networks are typically priced well below fiber networks, while providing very high throughput rates.

### Capacity

Fast download speeds.

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## COAX IS BEST FOR

- + Small- to medium-sized businesses with typical email and file-transfer needs
    - + Retail operations
  - + Construction and transportation companies
    - + Wholesalers
    - + Insurance agencies
    - + Manufacturing firms
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## Why coax?

Coax solutions are the best value for companies that do not regularly transfer large files or data. Coax provides significantly greater throughput than DSL, and is more affordable than a T1. And typically, coax solutions can be up and running within a week or 10 days of the initial order.

	DSL	COAXIAL	T1	FIBER
COST	\$	\$	\$\$\$	\$\$\$\$
DOWNLOAD SPEED	Up to 15 Mbps**	Up to 100 Mbps	Up to 1.5 Mbps	Up to 10 Gbps
UPLOAD SPEED	Up to 1 Mbps**	Up to 5 Mbps	Up to 1.5 Mbps	Up to 10 Gbps
SERVICE LEVEL AGREEMENT	No	No	Yes	Yes
BEST FOR	Typical business email, file transfer, sharing	Typical business email, file, transfer, sharing. Faster speeds can also support streaming video, cloud computing and other bandwidth intensive applications	Email, web surfing, small file transfer	Larger file transfer (upload and download), cloud-based applications, video conferencing and other bandwidth intensive applications

### Summary

Choosing between cable and fiber depends on your unique business needs. If your company primarily uses the Internet for incoming connections, coax is a proven solution with fast connection rates. Its relative ubiquity also means that coax solutions are available virtually everywhere. A fiber solution makes the best sense for getting the fastest speeds on both upload and download, so it is a good solution if your company relies on regularly transmitting large amounts of data, images or video.

### Why Charter Business

As businesses continue to look for ways to operate more effectively and efficiently, managing network-related costs and getting the level of service you need are paramount. And ultimately, finding the right partner is just the first step towards a complete, integrated business strategy. With Charter Business, you get the benefits of the latest communications technology while leveraging our professional staff as a natural extension of your own IT organization. You can rely on us to help you drive increased revenue, lower operating costs, and meet rising customer demand for better services faster.