SIMPLIFYING TECHNOLOGY:
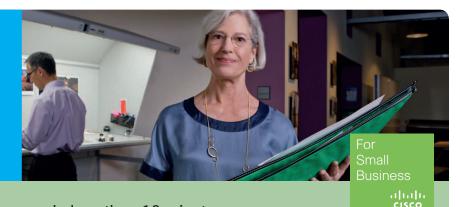
Ways to CONNECT Your Business

DISCOVER HOW TO:

- Increase productivity
- Improve security and customer service
- Reduce costs

For
Small
Business

CISCO

If you're in business, you connect to the world's largest public network—the Internet. Is the way that your company connects to customers and suppliers—and connects employees to each other—suitable for doing business?

Learn the who, why, how, and where of connecting a business—so you can make informed technology decisions that save your company time and money.

In less than 10 minutes you can read this guide and learn:

- Who needs a business-class network

- Why invest in a business network: The return on investment (ROI)

- How a business network does it: The five key connection technologies

- Where to find the Cisco® resources you need

Who Needs a Business-Class Network?

"Consumer-class" networks are found most often in homes, where only rudimentary security, reliability, and performance are adequate for the network's users.

A higher level of security, performance, and reliability in a network are what make it "business class."

Don't worry: business-class is not a euphemism for complex. Many small businesses choose business-class networks that are simple to use, so their employees can focus on doing business, instead of managing the technology.

What operations of your company need a business-class network? To find out, answer these questions:

Y N
☐ ☐ Must employees at your business quickly and reliably access or share digital information, using laptops, computers, and smartphones?

Y N
☐ ☐ Do employees need a secure way to connect to your business applications and files when they are working remotely—for example, when traveling, meeting with a customer, or working from home?

Y N
☐ ☐ Do you want to offer Wi-Fi to visitors or to employees so they can work wherever they are at your site? Should you protect your company's

wireless network from unauthorized users, including passersby?

Y   N   Would you like to use cloud services, such as Google Apps or Salesforce.com?

Y   N   Would your business automate some manual processes if it could prevent unauthorized employees from seeing certain types of data—such as financial files?

Y   N   Do you want your company to have clear conversations over the Internet? To use

video conferencing or surveillance, or view other video streams—without images freezing or jittering?

Y   N   Should you protect the data, applications and equipment on your network from malware, hackers, and other unauthorized users?

If you answered yes to any of the questions, you need a business-class network.

Why Invest in a Business Network: The ROI

A business-class network can increase the profitability of your company in multiple ways. Typically, it delivers a return on investment that includes at least two of these four metrics:

- Increases productivity
- Reduces costs
- Increases security
- Improves customer service

CONSIDER THESE REAL-LIFE SMALL-BUSINESS EXAMPLES:

A **service business** upgraded its manual systems and independent PCs to a business network.

Cisco switches and routers provide employees with reliable, highly secure access to customer scheduling, billing, and other essential business information—instantly, from anywhere. The ROI:

- Reduced travel and labor costs
- Improved customer service by enabling branches to share data and files
- Increased productivity by making processes more efficient and enabling highly secure mobile and remote connections, including from home

A **retail business** upgraded its patchwork of network products to resolve unreliable and slow data exchanges between its sites, and to protect confidential information.

Cisco routers with built-in encrypted virtual private networks (VPNs) between the sites produced this ROI:

- Increased data security, including customer credit card transactions
- Improved customer service by speeding response times
- Increased productivity by making data exchanges fast and reliable, and automating financial reporting

A **fledgling company** decided to invest in a network that would entice business clients.

Its Cisco solution provides clients with fast and dependable networking in an easy-to-use system with wireless service and built-in security. The ROI:

- Provided reliable connections, locally and remotely
- Helped ensure data security for business clients large and small
- Created a competitive advantage in customer service; the company became an award winner

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How a Business Network Does It: The 5 Key Connection Technologies

We keep it simple to give you a useful, quick understanding of the business-class network essentials: bandwidth, power over Ethernet, switches, routers, and wireless access points.

Bandwidth

Digital information ("traffic") travels through various media ("pipes"). The pipes vary in their bandwidth (the capacity available to carry digital data).

Adequate bandwidth is necessary for multiple users to simultaneously and quickly access or share digital information without slowing other users' applications or crashing the network.

What kinds of digital information does your business use? A network that

moves video, voice, or digital image files requires more bandwidth than a network that just shares document files and a printer.

Your choice of bandwidth must satisfy the requirements of all your business applications and network users. You may also want to allow extra bandwidth for upcoming increases in traffic.

Power over Ethernet

The movement of traffic on a network is powered by electricity in the connecting device (such as a computer, surveillance camera, wireless access point, or switch).

Power over Ethernet (PoE) is a business-class technology especially useful in locations where providing AC power and wiring would be expensive

Following are the major bandwidth options for small businesses:

Context Clues for Bandwidth Requirements		
Sample Files ("Payloads")	File Size	
	In Bytes*	in Bits*
1 diagnostic medical image	650 MB	5.2 Gb
1 basic electronic medical record	200 MB	1.6 Gb
A 3-minute video clip	25 MB	200 Mb
20 PowerPoint slides	2.5 MB	20 Mb
A 3-minute song	500 KB	4 Mb
A 2-page PDF document	150 KB	1.2 Mb
1 web page: Cisco home page	18.12 KB	145 Kb

Pipes for Your Internal Network that connects users and devices to each other locally within your business site, via your network switch	Maximum Bandwidth*
Gigabit Ethernet (cable)	1000 Mbps megabits per second (Mbps)
Fast Ethernet (cable)	100 Mbps
Wireless network 802.11 (radio frequency)	150 Mbps
Ethernet (cable)	10 Mbps
Pipes for the External Network of the service provider that connects your business to the outside world and Internet, via your network router	Maximum Bandwidth*
Cable Internet	50 Mbps
Fiber-optic cable	18 Mbps downstream, 1.5 Mbps upstream
DSL (ADSL) phone wire	6 Mbps downstream, 512 Kbps upstream

* A byte (B) = 8 bits (b)   A megabit (Mb) = 1,000 kilobits (Kb)   A gigabit (Gb) = 1,000 megabits (Mb)

or inconvenient—for example, on a ceiling, outdoors, or in older buildings. PoE delivers DC power through the Ethernet cable, along with the data.

Unlike a USB cable, PoE can provide the wattage required by wireless access points, switches, and Internet phones; it also provides power over longer distances.

Switches

A switch creates a network within your business, called a local area network (LAN). The switch functions as a bridge with ports that connect your digital devices—computers, servers, printers, and wireless access points—so they can talk to each other efficiently. They communicate mostly via Ethernet and the Internet Protocol (IP).

The top benefits of a business-class switch include higher employee productivity and data security, and lower operating costs.

Important switch features to consider include:

- **Managed or unmanaged switch**
- **Quality of service (QoS),** which prioritizes certain types of traffic for the best network performance—a must-have for voice calls and streaming video, including videoconferencing
- **Energy efficiency**
- **IPv6 support** that eases the transition from today's IPv4 world to next-generation operating systems without having to upgrade your network
- **Security features,** including virtual LANs (VLANs) to segment types of traffic (such as your financial or personnel files)

Routers

A router allows multiple employees to share a connection to the outside world, such as the Internet.

The top benefits of a business-class router are higher security and

employee productivity, and the cost savings of a shared network interface.

Important router features to consider include:

- **VLAN creation** that segments traffic for more efficient routing and higher security

- **VPN capabilities,** which create secure "tunnels" for employees working remotely to communicate with your network

- **Other security features,** including firewall, encryption, wireless security, and web protection such as Cisco ProtectLink Web that can block web-based attacks and control employee web access

- **Load balancing and connection redundancy** that improve network performance and reliability

Wireless Access Points

A wireless network connects digital devices to a router or switch without wires or cables, by using radio waves. Typically, a wireless access point provides the radio signal coverage to be shared by Wi-Fi users. Whereas most Wi-Fi hotspots are for public access, business-class wireless access points can control who has access to the network.

Compelling benefits of business-class wireless networking include user mobility, flexibility in locating or expanding a network, lower operating costs, and higher data security.

Important wireless features to consider include:

- **Security features,** such as encryption, access control lists and address filtering, and VLANs to segment access for guests

- **Wireless-N (802.11n),** which improves reception and roaming by providing more bandwidth and coverage than older wireless standards (802.11a/b/g); it is best for voice

- QoS support

- **Clustering intelligence** that saves hours of technical labor by simplifying the setup and management of multiple access points—configure one and you're done

Where to Find the Resources You Need

Now that you've learned the basics of business-class networking, how can your company make better connections?

We're ready to help. Cisco Small Business technology can help you connect your business to the world, secure it, and communicate more effectively using reliable, affordable options that fit your unique needs.

Choose Cisco for technology you can trust to help your business succeed. Count on us for:

· **Business-class products.** Find your Cisco Small Business solutions online, or tap the expertise of a local Cisco Certified Partner or service provider to make the right choice simple.

· **A worry-free investment.** We offer strong product warranties and an extensive product portfolio that can grow with your business. We also frequently offer financing, including leasing.

· **The technical support your business needs.** We provide a full range of support specifically for small businesses.

Is it time for your company to increase productivity, improve security and customer service, or reduce costs?