Lesson 7: Business E-Mail and Personal Information Management

Objectives

By the end of this lesson, you will be able to:

✓ 1.5.14: Explain the function of a CAPTCHA when requesting services from the Web.
✓ 1.6.1: Configure an e-mail client to send and receive e-mail, including SMTP, POP3, IMAP, Web-based e-mail support.
✓ 1.6.2: Distinguish between MIME, S/MIME and PGP/GPG.
✓ 1.6.3: Configure an appropriate e-mail signature and identify its usefulness in a business setting.
✓ 1.6.4: Identify the usefulness of an e-mail thread, and when it is appropriate.
✓ 1.6.5: Identify spam and take steps to manage it, including creation of client-side filters and SMTP authentication.
✓ 1.6.6: Define blind copying (BCC).
✓ 1.6.7: Distinguish e-mail forwarding from replying.
✓ 1.6.8: Identify e-mail etiquette, including emoticons, ALL CAPS type.
✓ 1.6.9: Identify ways that e-mail is used in the workplace, including elements of a successful e-mail message (e.g., greeting, central message, action items, conclusion).
✓ 1.6.10: Identify common e-mail issues in the workplace, including harassment, when to use e-mail, e-mail message storage.
✓ 1.6.11: Use "Out of Office" messages for e-mail automatic reply (i.e., autoresponder) services.
✓ 1.6.12: Attach files to e-mail messages.
✓ 1.6.13: Use e-mail to share files and documents within and across organizations.
1.6.14: Identify concerns for Web-based and IMAP-based e-mail.
1.6.15: Identify situations in business environments when e-mail is more appropriate than texting for communicating, and vice-versa.
1.7.6: Identify privacy concerns related to network communications (e.g., e-mail, instant messaging, P2P).
1.12.1: Identify ways that calendar and scheduling software helps organize IT-based activities.
1.12.2: Identify Personal Information Management (PIM) productivity applications, including tools for PCs and smartphones.
Pre-Assessment Questions

1. What feature provided with many e-mail programs can store information for commonly accessed e-mail contacts?
   a. Import tool
   b. Address book
   c. Autoresponder
   d. Attachment

2. What is an e-mail signature?
   a. A digital display of one’s handwritten signature
   b. Proof of one’s identity for security purposes
   c. A closing remark that is manually attached to an e-mail message
   d. Text that appears automatically at the bottom of an e-mail message

3. Name the protocol used to send e-mail over the Internet, and name one of two protocols that can be used to receive e-mail over the Internet.
Introduction to Business Electronic Mail (E-Mail)

Electronic mail, or e-mail, is widely embraced for business communication. The commonplace use of electronic mail has given rise to the term **snail mail**, which is a slang term for the standard postal service. E-mail allows businesses to communicate quickly and efficiently with customers and employees.

**CIW Online Resources – Movie Clips**

Visit CIW Online at http://education.Certification-Partners.com/CIW to watch a movie clip about this topic.

*Lesson 7: Business E-Mail and Personal Information Management*

**E-mail is not dead**

With the advent of texting, many mobile phone users have questioned the usefulness of e-mail. However, e-mail is still the *de facto* standard communication tool for business. The benefits of using e-mail include the ability to include attachments; the ability write lengthy messages; and having a paper trail, or e-mail thread, of your communications. The ability to easily store and organize e-mail is another major benefit. Messages can quickly be searched, accessed and archived. This is particularly important if you need to find a message from a customer from several years past, for example. Texting is often used between employees for sending quick messages and alerts. For instance, if an employee is meeting with a customer, the parties may text one another about their current location or if they are running late. However, you would not send a business contract using a text message. Texting can be an alternative to e-mail in business, but it is not a replacement.

**How E-Mail Works**

Whether your e-mail system is configured for you at work or you set up your own system at home with a modem and an e-mail program, the basic function of e-mail is simple: You use it to send electronic messages from one computer to another.

For messages to be sent from one computer to another, the computers must be linked, or networked. You may have a physical connection (such as a cable) between the two computer stations, or the computers may each connect to a local server that relays the messages, or the computers may use the Internet to relay messages.

Even if you use a Web-based e-mail service, such as Gmail, Hotmail or Yahoo! Mail, the e-mail message is sent from one computer to another. For example, a Gmail server sends an e-mail to a Hotmail server. The user then downloads the message to his or her PC or mobile device.

**Networks and addresses**

As you learned previously in this course, Internet communication is made possible by TCP/IP software. Remember that TCP enables two computers to establish a communication link and exchange packets of data, while IP configures the format and addressing scheme of the packets. TCP/IP software sends information to the computer with which you are connected, which then passes it on to other computers until it reaches the destination.
Every device on the Internet has a unique IP address, just as every house and business has a street address. An IP address is a series of numbers divided into four sections, each separated by a period, or dot. IP addresses are also called "dotted quads."

Local area networks (LANs) and wide area networks (WANs) use IP addresses to identify each user on the network, whether or not the network has access to the Internet. When you log on to the company network, you enter a user name that the network associates with your IP address. Some companies devise their own internal IP address scheme and never connect to the Internet. These companies use TCP/IP across leased lines and establish an internal network.

E-mail is available to anyone who has an IP address either on an internal network or on the Internet. When you use e-mail at work, your IT department assigns you an IP address and user name by which the company network recognizes you. Usually when you log on to a company network, you must also enter a password. IT departments generally assign a generic password to a new account, which you can later change. When you purchase Internet service through an ISP or a commercial online service, your provider assigns an IP address to you. Your provider uses that IP address to recognize you, and you can send and receive e-mail using that address.

When you are logged on to the network or connected to the Internet, you can create an electronic message using an e-mail program, and send your message across the network (or the Internet) using a specific address for your intended recipient. The network delivers your message, and your recipient receives and reads your message using an e-mail program.

**E-mail protocols**

As you learned earlier in this course, e-mail involves two mail servers: outgoing and incoming. You can use separate servers for outgoing and incoming e-mail, or a single server for both tasks. The outgoing and incoming servers use various protocols to send, receive and store e-mail messages.

**Outgoing mail protocol: Simple Mail Transfer Protocol (SMTP)**

You send e-mail to others with an outgoing server using Simple Mail Transfer Protocol (SMTP). SMTP is the Internet standard protocol for transferring e-mail messages from one computer to another. It specifies how two e-mail systems interact. SMTP is responsible solely for sending e-mail messages, and is part of the TCP/IP suite.

**MTAs and MDAs**

An outgoing mail server runs a **Message Transfer Agent (MTA)**, also called a mail transport agent, which routes, delivers and receives messages, usually via SMTP. A **Mail Delivery Agent (MDA)** receives the messages delivered by the MTA and then delivers each message to its proper destination (or mailbox), where a user can pick it up.

**Incoming mail protocols: POP3 and IMAP**

As you have learned, you receive e-mail from an incoming mail server using Post Office Protocol version 3 (POP3) or Internet Message Access Protocol (IMAP). POP3 and IMAP are used to store and access e-mail messages.

**Post Office Protocol version 3 (POP3)**

POP3 servers receive and hold incoming e-mail messages in the appropriate mailbox on the server until users log on (authenticate themselves with a user name and password) and download their mail. Once messages are downloaded, they are removed from the
Because messages are downloaded immediately, you do not need a constant connection with the server in order to work with your e-mail, which is beneficial for people who have dial-up connections. POP3 is also referred to as a "store-and-forward" service.

**Internet Message Access Protocol (IMAP)**

An IMAP server receives and holds your messages. When you log on with your user name and password, you can read a message on the server, or you can view just the heading and the sender of the message and decide whether to download it. Messages are not downloaded automatically as they are with a POP3 server. E-mail clients, including Mozilla Thunderbird and Microsoft Windows Live Mail, support IMAP and allow you to specify multiple IMAP accounts.

Using IMAP, you can create and manipulate mailboxes or folders directly on the server, and the messages remain on the server until you delete them. IMAP can be thought of as a remote file server. If you are working remotely, you must have a constant connection with the server, and IMAP is more widely used by people who maintain a constant connection, for example through a wireless carrier, DSL, a mobile hotspot or cable. Users who want to work with their e-mail files locally must download their messages.

**E-mail addresses**

To send and receive messages, you need an e-mail address. E-mail addresses use the following format:

```
username@domain
```

All e-mail addresses contain the @ symbol between the **user name** and the domain. The @ symbol means "at." The following is a typical e-mail address format:

```
student1@class.com
```

The part of the address before the @ identifies the user within a domain. The user name is also known as an e-mail account. When you purchase Internet service or when you join a company that has e-mail, you choose (or you are assigned) a user name. Because the rules for creating user names are flexible, conventions vary. Typically, the user name is related to the person's name or job function, as shown in the following examples, and may also include periods, underscores or numbers in addition to letters:

```
accounting@company.net
jsmith@company.net
johns@company.net
john.smith@company.net
```

The part of the address after the @ is the domain name of the organization or company that issues the e-mail account. (As you learned earlier in this course, a domain name is an IP address represented in words.) The domain name portion of your e-mail address identifies your location on the Internet (or on the company network) so that you can receive mail.

Your e-mail address, like your home address, is unique; no one else can have the same address within the same domain. For example, different individuals can have the addresses johndoe@fed.gov, johndoe@fed.com and johndoe@fed.mil because the user name is not duplicated within the same domain. This arrangement is similar to having a 1234 Main Street in various U.S. cities.
E-mail services and programs

Many types of e-mail services are available. You can use an **e-mail client** to send messages over the Internet if you have an account with an ISP. Mozilla Thunderbird is a popular e-mail program on the Internet because it can run on multiple platforms, such as Apple OS X, Linux and Windows. E-mail clients are for e-mail purposes only; however, they are sometimes integrated within a Web browser (Opera Mail is an example of this configuration). An e-mail client is also referred to as a **Mail User Agent (MUA)**.

**Free e-mail applications**

You can also use **browser e-mail** programs. E-mail applications such as Mozilla Thunderbird, Windows Live Mail and Opera Mail have been available for years. These applications lack sophisticated features found in applications such as Microsoft Outlook, but are appropriate for many individuals and small businesses.

**Web-based e-mail**

You can also use **Web-based e-mail** services. Several such services are available, including Google Gmail, Yahoo! Mail and Windows Live Hotmail. Web-based e-mail is free, offers e-mail accounts that are accessible from any computer with Internet access, and permits family members who share a single Internet account to have separate e-mail addresses. However, you must have Internet access through a service provider before you can use Web-based e-mail, or you can use a public computer that offers Internet access, such as a computer at a public library.

Web-based MUAs store e-mail messages on their cloud servers, and users access their e-mail through a Web page. You can also use an e-mail client to download mail from a Web-based account.

When you create a Web-based e-mail account, you request a user name (e-mail address), and the hosting service will accept or deny your request depending upon whether that name is already in use within that domain. You created a Google account and a Windows Live account earlier in this course. Both accounts provide free e-mail services.

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**E-mail over the Internet**

Because your e-mail address is unique within a domain, and because your user name and domain constitute a unique address on the Internet, anyone who knows your address can send you e-mail. The computers to which you connect on the Internet use TCP/IP to deliver your messages to your specific address.

**Gateways**

The people sending you messages need not be in the same domain, nor does it matter which e-mail programs they use. Your unique Internet address ensures that the message will be delivered to you. Gateways between e-mail systems allow users on different e-mail systems to exchange messages. A gateway is a computer that connects two networks that have different protocols.
Gateways enable you to send and receive e-mail between all Internet mail services over the Internet because they enable different networks to communicate. For example, if you have an account with Google, you can send an e-mail message to your brother in another state, who has an account at his university. He in turn can forward your message to your cousin in another country, who has an account with her employer.

**E-mail on a network**

E-mail works on a network much as it does over the Internet. Each user has a specific IP address within the company’s domain, and messages are routed from one user to another via the network server, which uses TCP/IP to transfer messages to specific IP addresses.

However, LANs may use proprietary protocols to send messages to people within the LAN, and use SMTP to send e-mail to recipients outside the LAN, such as remote employees or business associates.

Some networks may be self-contained; they will use only proprietary protocols to send messages to people within the LAN. You may be unable to connect to the global Internet from within your company's network. In such cases, you can send and receive messages to and from your co-workers, but you cannot exchange messages with anyone outside the network.

**MIME, S/MIME, PGP and GPG**

MIME controls the way that messages and attachments are organized and distinguished from one another, whereas S/MIME controls the way that encryption information and digital certificates can be included as part of an e-mail message. Most browsers support S/MIME. PGP and GPG are alternatives to S/MIME.

**Multipurpose Internet Mail Extensions (MIME)**

A protocol that enables operating systems to map file name extensions to corresponding applications. Also used by applications to automatically process files downloaded from the Internet.

**header**

A block of information attached to a piece of data. The first part of a network packet. Can contain network addressing information or additional information that helps computers and applications process data.

**Secure MIME (S/MIME)**

Secure version of MIME that adds encryption to MIME data.
Pretty Good Privacy (PGP)

An alternative to S/MIME is **Pretty Good Privacy (PGP)**, a method developed by Philip Zimmerman for encrypting and decrypting e-mail messages. PGP is available in a free version defined by the IETF’s OpenPGP specification, which uses non-patented encryption algorithms. The commercial version, owned by Symantec Corporation, uses various encryption algorithms, depending on the task.

PGP uses the public-key encryption system. Each user has a publicly known encryption key, which is used to encrypt messages, and a private key (known only to that user), which is used to decrypt messages. When you encrypt a message intended for your recipient, you encrypt it using his or her public key. When the recipient receives the message, he or she decrypts it with his or her private key.

To use PGP, you download (or purchase) it and install it on your computer. Then you register the public key that your PGP program gives you with a PGP public-key server. This process enables people with whom you exchange messages to find your public key and use it for encrypting messages they send you.

PGP runs on most operating systems. You can access the latest free, open-source version from the PGP Alliance’s Web site at [www.openpgp.org](http://www.openpgp.org).

GNU Privacy Guard (GPG)

**GNU Privacy Guard (GPG)**, also known as GnuPG, is an open-source implementation of OpenPGP that does not use patented algorithms. It is free and can be used, modified and distributed under the terms of the GNU General Public License (GPL). The GNU GPL guarantees a developer’s freedom to share and change free software, and to ensure the software is free for all users. GnuPG is available for Linux/UNIX, as well as for OS X and Windows operating systems. Visit [www.gnupg.org/download/](http://www.gnupg.org/download/) to download GnuPG.

PGP and GnuPG encrypt the e-mail message and its attachments. However, neither encrypts the authentication session (that is, your user name and password for signing on and receiving and sending mail) or the e-mail’s Subject field. When you use these encryption tools, you should not include sensitive information in the Subject field.

**CIW Online Resources – Online Exercise**

Visit CIW Online at [http://education.Certification-Partners.com/CIW](http://education.Certification-Partners.com/CIW) to complete an interactive exercise that will reinforce what you have learned about this topic.

*Exercise 7-2: E-mail encryption*
E-Mail Configuration Requirements

Before a user can send and receive e-mail, an e-mail client must be installed and configured. To configure an e-mail client, you must identify yourself and provide the names of the mail servers used by your ISP. Most e-mail clients allow you to set up and configure multiple accounts.

Configuring Windows Live Mail

Windows Live Mail is an e-mail program designed for Windows 7. It can be downloaded as part of the Windows Live Essentials application suite. Windows Live Mail requires the same configuration information as most e-mail clients: the e-mail address, the name of the outgoing (SMTP) mail server, the name of the incoming (POP3) mail server, a POP3 account name and a POP3 account password.

![Tech Tip](image)

You can also specify an IMAP or HTTP server as the incoming mail server. HTTP servers are used for Web-based e-mail accounts.

You use the General and Servers tabs of the Properties dialog box to specify these settings in Windows Live Mail. Use the General tab of the Properties dialog box (Figure 7-1) in Windows Live Mail to specify your user name and e-mail address.

![Figure 7-1: Configuring Windows Live Mail to manage Hotmail account](image)

When you log on to your e-mail account, your user name and password are sent to the POP server for authentication. You can download your messages only after you have supplied a valid user name and password.

You use the Servers tab of the Properties dialog box (Figure 7-2) in Windows Live Mail to specify the names of your Hotmail account’s incoming and outgoing mail server(s). Hotmail directs mail to an HTTP server for mail services, as do many other Web-based e-mail accounts. You also use this tab to specify your account name and password.
Notice that the Outgoing Mail Server section of the Properties dialog box contains an option that reads My Server Requires Authentication. This option is available in most e-mail clients. Some system administrators configure their SMTP servers to require a user name and password in order to send e-mail as well as to receive it. When you select this option, you enable your e-mail client to send your user information each time you send an e-mail message.

System administrators may require authentication before sending mail in an effort to curtail the illicit use of their SMTP servers for sending unsolicited junk mail, or spam (which will be discussed later in this lesson). One of the drawbacks of requiring SMTP authentication is that the transmission of the user name and password are not encrypted by default, therefore the requirement increases the chances that a hacker can use a packet sniffer (software that monitors network activity) to obtain a valid user name and password.

**Configuring Mozilla Thunderbird**

In addition to its Firefox Web browser, Mozilla offers an integrated e-mail program called Thunderbird. To specify e-mail configuration settings in Thunderbird, you use the Account Wizard. Figure 7-3 shows the Identity screen of the Account Wizard, which you use to specify your name and e-mail address.
Figure 7-3: Thunderbird Account Wizard — Mail Account Setup screen

Figure 7-4 shows the e-mail server names in the Mail Account Setup screen. You use this screen to identify the address of your POP3 (incoming) server and your SMTP (outgoing) server.

Figure 7-4: Thunderbird Mail Account Setup screen with mail server configurations

Remember that service patches and updates for e-mail clients become available periodically. Check the vendor sites frequently for updates. Consider that some functions for e-mail messages, such as printing, may be configured outside the client.

CIW Online Resources – Online Exercise

Visit CIW Online at http://education.Certification-Partners.com/CIW to complete an interactive exercise that will reinforce what you have learned about this topic.

Exercise 7-3: E-mail configuration requirements

In the following lab, you will configure Mozilla Thunderbird as an e-mail client. Suppose the personnel manager of your company requests a laptop with Thunderbird set up as
the e-mail client. You can configure Thunderbird to access the corporate e-mail servers so that the manager can use the laptop to access her company e-mail.

**Lab 7-1: Configuring Thunderbird as your e-mail client**

In this lab, you will configure Mozilla Thunderbird as your e-mail client.

1. First, you will install Thunderbird. Open *Windows Explorer* and navigate to the `C:\CIW\Internet\Lab Files\Lesson07` folder. Double-click `Thunderbird Setup 12.0.1.exe`, then click *Run*. If the User Account Control window appears, click *Yes* to allow Thunderbird to install. The Mozilla Thunderbird Setup Wizard will appear, as shown in Figure 7-5.

![Figure 7-5: Setting up Mozilla Thunderbird as your e-mail client](image)

2. Click *Next* to display the Setup Type screen. Ensure that *Standard* is selected and click *Next*. If the License Agreement appears, accept the agreement.

3. In the Summary screen, click *Install*. Click *Finish* when the installation is complete. Thunderbird should open by default. If it does not, double-click the *Mozilla Thunderbird* Desktop icon.

4. Next, you will configure Thunderbird as your e-mail client. Notice that Thunderbird opens automatically and displays the Import Wizard. Select *Don't Import Anything*, then click *Next* to display the Account Wizard.

5. Ensure that the *Mail Account Setup* window is selected. Type your Windows Live ID for the Hotmail account you created earlier in this course. (If you do not have a Windows Live Hotmail account, go to [http://login.live.com](http://login.live.com) and create a Windows Live ID and Hotmail account.)

6. Press *TAB*, then type your e-mail address, such as `ciw.yourname@hotmail.com`. Press *TAB*, then enter the password for your account.

7. Click the *Continue* button. You should see a message stating "Configuration found in Mozilla ISP database." If not, ensure your Hotmail configurations are correct.
8. Notice the incoming and outgoing mail server information, as shown in Figure 7-6. The POP3 and SMTP servers for Hotmail are listed.

![Figure 7-6: E-mail account settings](image)

9. Click the **Create Account** button. The installation is now complete, and the Thunderbird interface will appear. Click your **Inbox**, as shown in Figure 7-7.

![Figure 7-7: Thunderbird Inbox](image)

10. Select **Tools | Account Settings** to display the Account Settings dialog box.
11. Click **Server Settings** to review the POP settings.
12. Click **Outgoing Server (SMTP)** to review the SMTP settings.
13. Close the **Account Settings** dialog box.
14. Close **Thunderbird**.
Web-based e-mail

You can set up Web-based (i.e., cloud-based) e-mail, such as Google Gmail, Windows Live Hotmail or Yahoo! Mail, while you are online. You set up an account by registering a Web-based e-mail address with the provider. In many cases, an e-mail message confirming your request for an account will be mailed to your new Web-based e-mail address, and you must respond to the message to activate your account.

Web-based e-mail is advantageous for many reasons. You can log on and check your e-mail from any computer that has Internet access. In theory, this eliminates the need to purchase Internet service from an ISP, although most users choose to purchase Internet service so that they do not have to use a public computer to check their e-mail. You can also set up multiple accounts, and you can send attachments (if your browser supports them).

After your Web-based account is set up, you can access your e-mail using the provider's Web page. You may also be able to download messages in an e-mail client such as Windows Mail. Search your Web host's help menus for information or instructions about configuring your e-mail client.

In the following lab, you will configure a Web-based e-mail account using Gmail. Suppose the marketing director of your company wants an e-mail account that he can use while traveling. He asks you to set up an account for him that will be free and accessible from any location. You can set up a free Gmail account for the marketing director that he can access from any computer that is connected to the Internet.

Lab 7-2: Configuring a Web-based e-mail account using Gmail

In this lab, you will set up a Web-based Gmail account.

1. Open your browser and go to www.google.com to visit the Google home page.

2. Click the Sign In link and use the Google account user name and password you created earlier in the course. (If you do not have a Google account, click the Sign In link, then click the Sign Up button to create an account.)

3. The Google Accounts pages may appear with messages:
   - A page may ask if you want to add a mobile phone number or change your e-mail account. These changes are not necessary, but you are welcome to add your mobile phone number. Click Save and Continue.
   - Another page may ask you to re-enter your password for security purposes. Enter your password and click Verify.

4. Your Google home page will appear. Click the Gmail link in the Google menu at the top of the page.

   Note: If you signed in with an existing Google account in Step 2, skip Step 5.

5. If you set up a new Google account in Step 2, a Welcome screen will appear. Click Next in this and each of the next few screens that prompt you to customize your account. In the last screen that appears, click Finish.

6. Your Gmail home page should appear. A message may appear at the top stating "Allow Gmail (mail.google.com) to open all e-mail links?" Click No.
7. The Gmail Inbox window should appear, as shown in Figure 7-8.

![Gmail Inbox window](image)

**Figure 7-8: Gmail Inbox window**

8. Click your e-mail address in the upper-right portion of the Web page. A drop-down menu will appear. Click **Sign Out** and return to the Gmail Sign In page.

9. Close your **browser**.

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**E-Mail Message Components**

Although e-mail programs may differ, all messages have the same basic components. Table 7-1 describes the typical elements of an e-mail message.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To (address) field</strong></td>
<td>Contains the e-mail address(es) of primary recipient(s). The address(es) you enter here are displayed in the e-mail message header.</td>
</tr>
<tr>
<td><strong>Cc (carbon copy) field</strong></td>
<td>Contains the e-mail address(es) of additional recipient(s) to whom you want to send the message. The address(es) you enter here are displayed in the e-mail message header.</td>
</tr>
<tr>
<td><strong>Bcc (blind carbon copy) field</strong></td>
<td>Contains the e-mail address(es) of additional recipient(s) to whom you want to send the message. The address(es) you enter here are not displayed in the e-mail message header. Recipients designated in the To and Cc fields will not be able to see recipients you specified in the Bcc field.</td>
</tr>
<tr>
<td><strong>Subject field</strong></td>
<td>Contains a brief description of the message content.</td>
</tr>
<tr>
<td><strong>Attachment field</strong></td>
<td>Indicates a file or files that are attached and sent with the message.</td>
</tr>
<tr>
<td><strong>Message field</strong></td>
<td>Contains the body of the message. You type your message directly into the message area.</td>
</tr>
<tr>
<td><strong>Signature field</strong></td>
<td>Contains a few lines of text that appear at the bottom of each message you send. A signature generally consists of the sender’s contact information.</td>
</tr>
</tbody>
</table>
The To, Cc, Bcc, Subject and Attachment components constitute the e-mail message header. The e-mail message header contains information about the message (such as its author, its intended recipients, its general content and whether separate files are attached), but is separate from the body of the message. The e-mail message header generally displays in a portion of the message window separate from the body of the message.

At the very least, an e-mail message must include one address in the To field. Windows Live Mail and Mozilla Thunderbird will prompt you if you attempt to send a message without a Subject line, although you can choose to send the message anyway. It is also possible to send an e-mail message that contains no body text, but doing so may have no purpose.

Attachments are separate files that you add to e-mail messages. When you attach a file using Windows Mail, a file icon, along with the name of the attached file, displays in the e-mail message header. (Other e-mail clients may display attachments differently.) When you receive a message that contains an attachment, an attachment icon displays to the left of the message subject in your Inbox. You can download and read the attachment, save the attachment to your hard drive or other storage location, or delete it. You will attach files to messages and open attachments in an upcoming lab.

Creating and Sending E-Mail Messages

Toolbar buttons and display windows vary among e-mail clients, but generally, the steps required to create and send an e-mail message are the same. To create an e-mail message, you click the command to create a new message, enter an address in the To field, enter a Subject line, type the message, attach any necessary files, then click the command to send the message.

Creating messages in Thunderbird

To create messages in Thunderbird, you display the Compose window. Type the recipient’s e-mail address in the To field. Type the subject of your message in the Subject field, then click in the message area of the window to type your message. When your message is complete, click the Send button to send the message.

By default, Thunderbird saves a copy of every message you send in the Sent folder. E-mail client folder structure will be discussed at length later in this lesson.

In the following lab, you will create and send e-mail messages using Thunderbird. Suppose your manager has assigned you the task of configuring Thunderbird on four systems. You have configured the client on each system, and now you can test each client by sending and receiving e-mail messages.
Lab 7-3: Creating and sending e-mail messages using Thunderbird

In this lab, you will create a new e-mail message in Thunderbird.

1. Start Thunderbird and enter your password (e.g., password). In the All Folders pane (the left pane), click Inbox to display your Inbox.

2. Click the Write button to display the Write window. Notice that the From, To and Subject fields display in the header.

   Note: The Cc and Bcc fields do not display by default. To display them, click the drop-down arrow at the left side of the To field, and select Cc or Bcc from the list.

3. In the To field, type your Hotmail e-mail address (e.g., ciw.yourname@hotmail.com) to address the message to yourself.

4. Press TAB to move the cursor to the Subject box, then type Test Message as the subject.

5. Press TAB to move the cursor to the message area of the window, then type:

   This is a test message.

This step enters the message text. Your message should resemble the one shown in Figure 7-9.

6. Click the Send button to send your message to the mail server.

7. Minimize the Thunderbird window.

Figure 7-9: Creating message in Thunderbird
Creating messages in Gmail

To create messages in Gmail, sign in to your account, then click the Compose button to display a blank new message window, as shown in Figure 7-10.

![Creating message in Gmail](image)

Notice that in Gmail, the Cc and Bcc fields do not display by default. You must click the Add Cc and Add Bcc links to display the fields.

Type the recipient’s e-mail address in the To field. Type the subject of your message in the Subject field, then click in the message area of the window to type your message. When your message is complete, click the Send button to send the message.

In the following lab, you will create and send e-mail messages using Gmail. Suppose you have set up a Gmail account for the marketing director of your company. You can test the account by using it to send and receive e-mail messages.

**Lab 7-4: Creating and sending e-mail messages using Gmail**

In this lab, you will use Gmail to send an e-mail message to a classmate and send a blind carbon copy to yourself.

1. Open a browser and go to mail.google.com.
2. Sign in to your Google account by entering your username and password, then click the Sign In button to display your Gmail Inbox.
3. Click the Compose button to open a blank message form.
4. In the To field, type your classmate’s Hotmail e-mail address.
5. Click Add Bcc to display the Bcc field. Enter your Gmail e-mail address in the field.
6. Press TAB to move to the Subject field, then type: A Brief Message From Me.
7. Press **TAB** to move to the message area, then type: *This is a test message from Gmail.*

8. Click the **Send** button to send your message. Click the **Sent Mail** link to view the message you sent to your classmate and to yourself.

9. Click the **Inbox** link to redisplay your Inbox. Notice that the message you sent was also delivered to you, because you specified your own address in the Bcc field.

10. Minimize browser window.

### Creating e-mail signatures

An e-mail signature consists of a few lines of text that appear at the bottom of each of your messages. A signature might identify your position, the department in which you work or both. Typical signatures include the sender's name and e-mail address. Your signature can also include the name of your company, a Web address and a phone number. The signature is a reminder to your recipients of your identity or the identity of your company. Following is a sample signature:

J.Q. Student, IT Professional  
Putting the Internet to Work  
Student51@class.com  
(800) 555-0162

In Thunderbird, you create an external signature file containing your custom signature. You can then link to that file from Thunderbird to automatically add your signature to your outgoing e-mail messages.

Most Web-based e-mail programs also include options for creating and attaching signatures automatically. Some also allow you to format the text in your signature.

In the following lab, you will create e-mail signatures in Thunderbird and Gmail. Suppose the marketing director has asked if it is possible to automate the process of adding his signature block to all outgoing messages. You can create an e-mail signature in each e-mail client to automate this process for him.

### Lab 7-5: Creating e-mail signatures in Thunderbird and Gmail

In this lab, you will create a signature block for your e-mail messages and then configure Thunderbird to attach your signature to outgoing messages. You will also create an e-mail signature from within Gmail.

1. First, you will add your signature file to outgoing messages in Thunderbird. Restore the **Thunderbird** window.

2. Select **Tools | Account Settings** to display the Account Settings dialog box.

3. Click your e-mail account in the left pane. In the **Signature Text** box, create a simple signature block using your name, the name of the company for which you would like to work, your Hotmail e-mail address and a phone number. Click **OK**.

4. On the toolbar, click the **Write** button to compose a new message. Notice that your signature appears at the bottom of the message.
5. Address the new message to yourself at your Hotmail account, write a brief message, then click the Send button. On the toolbar, click the Get Mail icon to receive your mail.

6. Minimize the Thunderbird window.

7. Next, you will create a signature in Gmail. Restore the browser window.

8. Click the Settings button in the upper-right portion of the page and select Settings. The Settings page will appear.

9. Scroll down the page and click anywhere in the Signature field. Create a simple signature block using your name, the name of the company for which you would like to work, your Gmail e-mail address and a phone number.

10. Scroll to the bottom of the Settings page, then click the Save Changes button.

11. Click the Compose button to open a new message window. Notice that your new signature appears.

12. Click the Discard button to cancel the message and return to your Inbox.

13. Minimize the browser window.

Using e-mail address books

E-mail programs include address books that allow you to store names and information for your frequently accessed e-mail contacts. Address books can contain e-mail addresses, names or aliases, phone numbers, street addresses and other relevant data. You can select a name from the address book list instead of typing an e-mail address each time you want to send a message.

Address books vary among e-mail clients, but all serve the same purpose, and many include features that will allow you to import contact names from other address books in other applications.

Using an address book to insert e-mail addresses is fast, convenient and accurate. Users do not need to remember or type addresses and can select several recipients at once. Most company e-mail systems include a global address book that contains the e-mail addresses of all company employees.

Attaching files to e-mail messages

You can attach almost any kind of file to an e-mail message. The ability to attach files (such as word processor documents, presentations, spreadsheets and images) to your messages makes e-mail a powerful tool, and allows users to share files and documents within their organization or with users in other organizations. Compression utilities (which will be discussed in a later lesson) enable you to compress large files into smaller sizes to send them efficiently across the Internet. E-mail clients use MIME to identify attached files by their file type.

Most e-mail clients display attachments in the e-mail message as separate links, such as a paper-clip icon. However, some display text attachments as additional text directly within the e-mail message. Older e-mail clients detach files from your e-mail messages upon arrival and automatically place the files into an attachment directory instead of leaving them attached to the message. These legacy e-mail clients do not indicate that an
attachment is included, and some may not receive attachments properly. Therefore, it is advisable to use an up-to-date e-mail client, such as the ones used in this class.

The recipient of a message with an attachment can open and edit the attached file in the appropriate application if that application is installed on his or her computer. To avoid frustrating your recipient, verify that he or she has the software necessary for viewing or editing the attached file before you send it.

**E-mail attachments and the server**

Your organization’s e-mail server may scan or even block e-mail attachments. Attachment scanning always takes place at the server, usually just after the message has been received via SMTP. Attachments are scanned because they may contain malicious code that can be used to damage or infiltrate systems. E-mail attachments are sometimes blocked completely for various reasons. Some companies block them to increase security. Others block attachments because they are deemed unnecessary or because they consume too much bandwidth.

In the following lab, you will add attachments to e-mail messages. Suppose your supervisor is working from home and asks you to send her several files that are located on her office computer. You can attach the requested files to an e-mail message and send them to her.

---

**Lab 7-6: Attaching files to e-mail messages**

In this lab, you will attach files to e-mail messages using Thunderbird and Gmail.

1. First, you will attach a file in Thunderbird. Restore the Thunderbird window.

2. Click the Write button, and address the new message to your Hotmail e-mail account.

3. Type Benefits Overview Information in the Subject field to indicate the subject of the message.

4. As the body of the message, type the following:

   Attached please find Benefits Overview documents. Please review these documents before attending the Benefits presentation.

5. Click the Attach button on the toolbar to display the Attach File(s) dialog box.

6. Navigate to the C:\CIW\Internet\Lab Files\Lesson07 folder.

7. Click Benefits Overview.doc, press and hold CTRL, click Benefits Overview.pdf, release CTRL, and then click the Open button to attach these two files.

8. Click the Send button to send the e-mail message with the attachments. Click the Get Mail button to receive your mail.

9. Click the Benefits Overview Information e-mail. Click the 2 Attachments link that appears at the bottom of the window. The attached files will appear.

10. Minimize the Thunderbird window.

11. Next, you will attach a file in Gmail. Restore the browser window.
12. Create a new message and address it to your Gmail account.

13. Type Benefits Overview Information in the Subject field to indicate the subject of the message.

14. As the body of the message, type the following:

   Attached please find Benefits Overview documents. Please review these documents before attending the Benefits presentation.

15. Click the Attach A File link to display the Open dialog box.

16. Navigate to the C:\CIW\Internet\Lab Files\Lesson07 folder.

17. Click Benefits Overview.doc, then click the Open button to attach the selected file.

18. Click the Attach Another File link, then take the necessary steps to attach the Benefits Overview.pdf file.

19. Click the Send button to send the message with the attachments.

20. Click the Inbox. The message should arrive. If not, click the Refresh button until it does arrive.

21. Select the Benefits Overview Information e-mail that you just sent to yourself. Notice the two attachments that appear below the message text.

22. Return to your Inbox, then minimize the browser window.

---

### Receiving and Viewing E-Mail Messages

Most e-mail programs contain all the tools you need for composing, sending and receiving messages. The e-mail client’s folder structure provides tools for viewing, storing and organizing items.

Although the folder names and order may vary from one client to the next, most e-mail programs include an Inbox folder, a folder for sent messages, a folder for deleted items and a folder for drafts. They also include an Outbox folder, which can contain messages that are queued for sending. This feature is very helpful for users with dial-up accounts or those who temporarily cannot access an Internet connection. It allows them to work offline and accumulate messages, then connect to the Internet for a few minutes to send all their queued messages at once, and then log off again.

The Thunderbird window is divided into four major sections:

- The toolbar contains shortcuts to the most frequently used e-mail tools.
- The All Folders pane displays the e-mail client’s organizational structure.
• The **Message** list displays the messages in your Inbox (or any folder in the structure that you choose to display).

• The **Preview** pane displays the text of any message you select in the Message list.

Figure 7-11 shows the sections of the Thunderbird window.

![Thunderbird window sections](image)

### Receiving e-mail messages

Most e-mail clients, including Thunderbird, can be configured to check the incoming mail server at regular intervals so that you can receive mail continuously while you are online. You can also check your incoming mail server at any time using the Get Mail (or equivalent) icon in the toolbar. To check for incoming messages in a Web-based e-mail application, click the Inbox link in the folder structure or click some other appropriate link to check the server.

When you send and receive mail, any messages stored in your Outbox (or equivalent) are sent, and a copy of each message is stored in the Sent (or equivalent) folder. Incoming messages are routed to your Inbox.

### Viewing e-mail messages

When you display the Inbox folder, information about each message displays in the Message list. A Message list usually displays the name of the sender, the subject of the message and the date received for each message. (If you display the Sent folder, the Message list displays recipient names, message subjects and sent dates.) The Message list also features columns that indicate the priority of a message, whether a message has been flagged, and whether a message includes an attachment.

Unread messages are usually represented by a closed-envelope, or similar, icon. Most e-mail programs allow you to use a Preview pane in which the text of the currently selected message displays below the Message list.

Double-click a message in the Thunderbird Message list to open it in a separate window. In a Web-based e-mail program, click the link for the message to open it.
In the following lab, you will receive and view e-mail messages, and you will save attachments to your computer. Suppose your supervisor has sent you a draft of a contract in an e-mail attachment and has asked you to complete various portions. You can save the attachment to your system, work on the document, save your changes, and then send the amended version as an e-mail attachment back to your boss.

### Lab 7-7: Receiving and viewing e-mail messages

In this lab, you will receive and view e-mail messages and attachments using Thunderbird and Gmail.

1. First, you will receive and view mail in Thunderbird. Restore the Thunderbird window.

2. On the toolbar, click the Get Mail button to send and receive all messages.

3. In the All Folders pane, click Inbox to display the Message list. Notice that the text of the first selected message is displayed in the Preview pane.

4. Click the message with the attachment to display its contents in the Preview pane.

5. Next, you will view and save attachments in Thunderbird. Double-click the message with the attachments to display its contents on a separate tab. Click the 2 Attachments link at the bottom of the message window. The Benefits Overview.doc file and the Benefits Overview.pdf file will appear.

6. Right-click Benefits Overview.pdf to display a drop-down menu. You can either open the attachment, or you can save it to your hard drive without opening it. This task can also be done from the Preview pane.

7. In the attachment drop-down menu, select Open to display a dialog box in which you specify the application you want to use to view the document. Notice that the default application is Adobe Reader because you have specified to open a PDF file.

8. Click OK to launch Adobe Reader and view the document.


10. Right-click Benefits Overview.doc, then select Save As to display the Save Attachment dialog box. You can specify to save attachments to any location you choose. Navigate to your Desktop.

11. Click the Save button to save the attachment to your Desktop.

12. Close the message window to return to the Message list.

13. In the Message list, click the Benefits Overview Information message to select it, if necessary, then press DELETE to move the message to the Trash folder. Moving a message to the Trash folder is equivalent to placing a file in your computer’s Recycle Bin — it will remain there (and can be restored) until you empty the Trash folder.

14. Minimize the Thunderbird window.

15. Next, you will receive and view messages in Gmail. Restore the browser window.

16. Click the Inbox link to download any new messages from the mail server.
17. Click the link for the message with the subject **A Brief Message From Me** to display it in a separate message page.

18. Click the **Inbox** link to return to the Inbox.

19. Select the check box to the left of the Benefits Overview Information message to mark the message, then click the **Delete** button to move the message to your Trash folder. You can click the **Empty Trash Now** link in the Trash folder to remove the message permanently.

20. Sign out of your Gmail account.

21. Close the **browser** window.

---

**E-Mail in the Workplace**

E-mail is used in today’s workplace for accomplishing a wide variety of tasks. Employees use e-mail to communicate with one another, to share files across the company or with other organizations, and to document and track the progress of projects. Some e-mail clients, such as Microsoft Outlook, also include calendar features that allow you to schedule meetings and send reminders via e-mail.

The following sections will describe the options available for responding to e-mail messages, and it will discuss some guidelines for keeping e-mail professional in the work environment.

### Responding to e-mail messages

E-mail clients offer several options for responding to messages. You can reply to the sender, you can reply to everyone addressed in the message, or you can forward the message to another user. Table 7-2 describes the result of each action.

<table>
<thead>
<tr>
<th>E-Mail Response Command</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reply</td>
<td>Displays a message window that automatically inserts the address of the original sender in the To field, the message subject and a copy of the original message. The subject line is prefaced by the letters <strong>RE:</strong> indicating that this message is a response.</td>
</tr>
<tr>
<td>Reply All</td>
<td>Displays a message window that automatically inserts the addresses of the original sender and all other recipients copied on the original message in the To field (or Cc field); the message subject; and a copy of the original message. The subject line is prefaced by the letters <strong>RE:</strong> indicating that this message is a response.</td>
</tr>
<tr>
<td>Forward</td>
<td>Displays a message window with a copy of the original message. The original subject line is automatically inserted and the subject line is prefaced by the letters <strong>FW:</strong> or <strong>FWD:</strong> indicating that this message is a forwarded copy of someone else’s message. No addresses are inserted in the To or Cc fields.</td>
</tr>
</tbody>
</table>

**Reply and Reply All**

When responding to e-mail messages that you have received, if you want to address only the original sender of the message, click the Reply button. If you want to address everyone copied on the original message, click the Reply All button.
When you click Reply or Reply All, the text you type is distinguished from the text of the original message. In the Microsoft Outlook e-mail client, your text displays in blue (by default) and flush with the left margin. The original text of the message, which is generally included by default, appears indented and is preceded by a divider reading:

-----Original Message-----

In Windows Live Mail, text from the original message is also preceded by:

-----Original Message-----

In both e-mail clients, the address of the original sender and recipient(s) displays in the text from the original message. The subject line is prefaced by the letters RE: indicating that the message you are sending is a response.

When you reply to a message, any attachment(s) from the original message are not included on the response message. Therefore, if you add any recipients to the response, be aware that they will not receive any material attached to the original message unless you attach it again.

Forward
If you want to send the message to a user who did not receive the original, click the Forward button.

When you forward a message to another recipient, the text you type is distinguished from the text of the original message in the same manner that it is distinguished from the original text of the message to which you have replied. The subject line is prefaced by the letters FW: or FWD: indicating that the message you are sending is forwarded.

Unlike replies, when you forward a message, any attachment(s) from the original message are included on the forwarded message.

Some e-mail clients precede each line of forwarded text with a right-pointing angle bracket (>).

Professional communication via e-mail
E-mail is a unique communication medium that combines the formality of a letter with the informality of a telephone call. Although e-mail is not a new form of communication, it may still be new to some users. The tendency in the busy work environment is to quickly send brief e-mail messages with little thought. Many individuals regret these hasty actions later. You should treat e-mail messages as you would treat any other written communication. The term netiquette has been coined to encourage common sense and politeness, and to establish general rules for Internet etiquette.

The workplace environment is usually professional. Professional communication via e-mail should follow the same guidelines as professional correspondence via standard mail, including the use of proper grammar and correct spelling. Following are several characteristics of professional communications to consider.

Responsiveness
When possible, respond immediately to e-mail messages addressed to you. Most people expect more immediate responses with e-mail than they do with other forms of business communication. Responding within 24 hours makes a good impression. However, think clearly about your responses, and answer messages only when you have gathered all your information.
Clarity
Remember that for business communication, it is important to be as clear as possible. Ideas should be communicated clearly and concisely to keep messages reasonably short. However, although acronyms and abbreviations such as LOL (Laughing Out Loud) or TIA (Thanks In Advance) may be familiar to you, they may not be familiar to everyone. Using acronyms and expecting them to be understood introduces the possibility of miscommunication.

Tone
Ensure that the tone of your message is respectful and restrained, particularly if you are writing about a sensitive or emotional topic.

Remember that your reader does not have the benefit of facial clues and tone of voice to help understand your message’s intended meaning. Your tone conveys your attitude toward your reader and the topic about which you are writing. Words that convey anger, stridency or sarcasm will simply distract your reader and obstruct your message.

Following are tips to control tone:

- **Write an appropriate greeting** — A greeting such as "Hey Guys" or "Everybody" is vague. A more focused greeting such as "Hi James" or "Dear Development Team" lets recipients know exactly for whom the message is intended.

- **Write an appropriate closing** — The closing ends the message and can serve as a final reminder of the main point or requested outcome of the message. A closing such as "Later" or "Toodles" can be used among friends or close co-workers, but is generally inappropriate in a business setting. A closing such as "I'll send you the document before tomorrow's meeting" or "Thanks for your assistance" ends the message with an action item or with courtesy.

- **Use standard capitalization and spelling** — Avoid typing messages in all capital letters; this practice connotes shouting or anger. All lowercase letters can convey inattention or haste, and may make your message more difficult to read. Typos, non-standard (or incorrect) spelling and abbreviations look unprofessional, and may even make recipients question your competence.

- **Write in active voice** — "I will send you the document before tomorrow’s meeting" is more direct and clear than, "The document will be sent to you before tomorrow’s meeting."

- **Communicate the most important items first** — If you bury important items in the middle of an e-mail, the recipient may miss them or misinterpret their importance.

- **Be judicious when attempting to convey humor or sarcasm** — In most cases, it is best to remain businesslike and write in a tone that is closest to the way you would speak to the recipient in person. Some people use emoticons in e-mail messages to give the recipient an idea of the intended tone, but this practice is not professional and is best reserved for personal communication.

Readability
Following are additional tips for writing clear, concise, professional e-mails:

- If you have several items to discuss, write them in a numbered or bulleted list for clarity.

- Avoid fancy typefaces that may be difficult to read.
• Include an introductory sentence to let the recipient know what the rest of the e-mail is about.
• Include action items where appropriate so that the recipient knows exactly what you are expecting from him or her.
• Skip lines between paragraphs.
• Proofread your e-mail to check it for spelling and contextual errors before sending it.

Permanence of e-mail

E-mail is permanent because it is written. Messages can be printed or forwarded to other people. This permanence can be helpful or detrimental in a business environment. Remember that after you click Send, the message cannot be retrieved.

History

When crafting e-mail messages, consider that the time and date are added to your message automatically. Recipients generally see timestamp information adjusted to their own time zones. Be aware of this when timeliness is important to the communication.

Subject line

Never leave the subject line blank. Choose an appropriate subject line for your message that is indicative of the message contents. Recipients generally scan subject lines to prioritize their messages. Depending on what you write as a subject, recipients may open a message immediately, file it away for future reference, forward it to someone else, or delete it. If your subject line is vague or misleading, your recipient(s) may not handle your message as expected.

Remember also that the subject line is usually visible from the Inbox view, and that your subject lines should remain professional and inoffensive.

Following are examples of inappropriate subject lines:

• <blank>
• Important! Read now!
• Questions

Following are examples of appropriate subject lines:

• New intranet login information
• Customer issues — need immediate resolution
• Questions about Project X
• Company holiday luncheon

Figure 7-12 shows an example of an unprofessional e-mail in a business setting.
Figure 7-12: Unprofessional e-mail in business setting

Figure 7-13 shows an example of a professional e-mail in a business setting that attempts to convey the same message as the previous figure. Compare the tone and content of Figure 7-13 with that of the previous figure.

Consider configuring your e-mail client to automatically check spelling on messages after you click the Send button. Doing so can help you catch typos you may not have seen before, even if you have "on the fly" automatic spell correction enabled. This feature can also help you avoid sending an e-mail message in anger or haste.
Recalling e-mail messages

Generally, it is impossible to recall sent e-mail messages. Some enterprise e-mail servers have the ability to revoke e-mail on a limited basis.

E-mail service providers such as Google have created add-ons to their features that provide a limited ability to recall, or "unsend," messages. However, you have only about five seconds to recall any message after you click the Send button in these cases. If you take any longer than this, the message will have already been sent out of the server.

So, as you send e-mail message, carefully consider the fact that in most cases, once you have clicked the Send button, the message will be delivered to the recipient.

E-mail threads

In business communication, it is good practice to include information from an original e-mail message in a response, generating what is known as an e-mail thread. E-mail clients usually include the original message when you click Reply or Forward. Most e-mail clients automatically format original message text in a manner that distinguishes it from the text of a reply or forward message, and most users recognize text preceded by an angle bracket (>) in the left margin to be text from an original message.

Including an e-mail thread in a continuing discussion reminds the recipients of all the previous details, and provides a record or history of an issue. Some issues may take weeks to resolve, and having a full thread of discussion may be helpful. However, if messages become too long, they can be tiresome to read. If new issues pertaining to the task at hand arise, consider beginning a new e-mail thread that will address only the new issues.

Reply vs. Reply All

Use the Reply All option judiciously to avoid sending unnecessary communications. If an original e-mail message was addressed to 18 people, and only you and the original sender need to pursue an issue further, use Reply instead of Reply All. You will save the other 17 recipients from unnecessarily reviewing your discussion with the original sender, and you may save the original sender embarrassment. Work out your issue with the person who sent the message. If a clarifying communication needs to be sent later to the other 17 recipients, it can be done when all the issues are resolved.

Attachments

Avoid sending unnecessary attachments. If you send an attachment, make sure the recipient wants it and has the ability to open it. Remember that large attachments can take a long time to download. Also, e-mail servers apply limits to attachment sizes. For instance, an e-mail provider may only allow attachments up to 20 MB.

E-mail privacy

An employer has legal ownership of everything an employee creates while on the job, including personal messages. Your employer has the right to read e-mail you send using company equipment and Internet connections. Your employer can also read e-mail sent to you from other sources — business acquaintances, friends, mailing lists, perhaps individuals you do not even know.

If you are given an e-mail address for company business, should you use that address to conduct private conversations as well? And if so, should you expect this correspondence
to be truly private? After all, your employer is paying for the Internet connection, the software, the browser, the operating system and so forth. If you send an e-mail message to a co-worker about another employee (perhaps discussing a promotion or a performance appraisal), is there a chance that the other employee will be able to read that message?

Although many companies now have written employee policies that address these questions, many often remain unanswered. Consider these issues before sending e-mail messages that you might expect to remain private.

**Out-of-office messages**

Because people expect a fairly immediate response to e-mail messages, it is important to provide notification to those sending you e-mail when you will be out of the office for an extended period of time (such as a vacation). People may get irritated if they send an e-mail message and get no response for a prolonged period with no explanation.

Some e-mail programs, such as Microsoft Outlook, include an autoresponder, or automatic reply, feature that allows you to configure and send an automated response to e-mail messages that are received while you are away. Generally, the same automated response is sent to every user who sends you a message. Some Web e-mail clients support this feature, with their free e-mail, and others include it only as part of a premium package for which they charge a fee.

An autoresponder feature in an e-mail client automatically sends a specified response to anyone who sends e-mail to your address. The feature does not interfere with any e-mail that you receive; those messages are stored in your Inbox as usual. When you compose your automatic reply message, you should specify the period of time you will be unavailable, and when you expect to respond to e-mail and phone messages received during your absence. You may want to include information about ways you can be reached while you are away, or specify the name and contact information of a co-worker who can handle issues on your behalf. Always keep automatic reply messages brief and professional.

For example, you can create an automatic reply message similar to the following:

```
I will be out of the office February 16 through February 20. During that time, I will not be accessible by phone or e-mail. I will return to the office February 23 and will respond to your e-mail message at that time. If you need assistance while I am away, please contact Stephanie Miller at smiller@company.com or (800) 555-0114, extension 5555.
```

Some people also create and enable automatic reply messages to provide information to customers or contacts when they leave a job. Following is an example of such a message:

```
My last day as Contracts Manager will be July 7. For contract issues after that date, please contact Stephanie Miller at smiller@company.com or (800) 555-0114, extension 5555. It has been a pleasure working with you.
```

**Configuring automatic replies**

The automatic reply feature must be enabled manually before the absence period and manually disabled upon return. In Outlook, this feature is called AutoReply. To use AutoReply in Outlook, select Out Of Office Assistant in the Tools drop-down menu (or in newer versions of Outlook, display the File ribbon, click Info, then click the Automatic Replies button). Select the I Am Currently Out Of The Office option. Create your own automatic reply message, then click OK. AutoReply is now enabled. To test the AutoReply
feature before you leave, send an e-mail message to yourself. You should receive your automatic reply to the message you sent, as well as the message itself.

Once you return to your office, remember to turn off the AutoReply feature. Failure to do so can generate confusion and make you seem irresponsible. Outlook will prompt you when you launch the program after enabling AutoReply. However, you must manually disable AutoReply.

To learn more about automatic vacation/out-of-office replies for specific e-mail services, visit the following Web sites:

- Gmail (https://mail.google.com/mail/?shva=1#settings)
- Hotmail/Windows Live Mail (http://email.about.com/od/windowslivehotmailtips/qt/et_autoreply_wl.htm)
- Yahoo! Mail (http://help.yahoo.com/l/us/yahoo/mail/ymail/basics/basics-52.html)

E-Mail Problems and Solutions

Although e-mail has many advantages, its widespread use has inherent problems. Several points should be considered in order to use e-mail wisely.

For example, e-mail content has contributed to several human resources issues, including sexual harassment, offensive language and the disclosure of confidential information.

Sending jokes via e-mail is a popular practice. However, think carefully before using company e-mail as an arena to spread humor. You might not know who will take offense to something you find funny. And consider that one of your recipients may forward your message to others who might take offense. Remember that your name and e-mail address are on the original.

It is also important to know when not to use e-mail. Confidential information (such as salary or hiring information) should be exchanged either in person or over the phone, or via the standard postal service. As previously discussed, e-mail is not private within an organization.

Also, some situations call for "live" communication (a phone call or face-to-face meeting). E-mail can be too impersonal or slow to satisfy some types of discussions, especially those involving emotionally charged issues.

Spam

Just as junk mail can fill your mailbox at home, junk e-mail can clutter your Inbox. Such unsolicited mail is called spam. Spam is unsolicited e-mail sent to multiple users and is often made to appear as if it came from a trusted source.
The people who send the messages, called spammers, are the Internet equivalent of telemarketers, and many commercial organizations purchase e-mail address lists for this purpose. Like a listed telephone number, your e-mail address is available through online directories. Spammers can also get e-mail addresses from newsgroups and chat rooms, and use Internet tools to search the Web and e-mail servers for valid addresses.

Spammed messages are often used for the following purposes:

- To generate sales for various services and products
- To spread malicious viruses and worms
- To spread virus hoaxes

Sending e-mail is virtually free (the only charge is for Internet service), so spam is free advertising for anyone who sends it. As with other types of marketing, the more messages that are sent, the more money an advertiser can make. Spamming can be a lucrative enterprise, especially if messages are sent in bulk.

Spammers often use automated registration programs to create large numbers of Web-based e-mail accounts. They use these accounts to send spam or to slow down a service by signing in to multiple accounts simultaneously.

Many spammers use automated tools to search the Internet for open relays, then use the open relays to send large amounts of spam. An open relay (also called a third-party relay or an insecure relay) is an SMTP server that allows third-party relay of e-mail messages. Open relays are frequently used to support mobile users or to support multiple domains within an organization. The relay feature is part of all SMTP-based servers. System administrators must turn off the relay option to protect their servers from illicit users.

Combating spam

The battle against spam takes place on both the server (host) side and the client (user) side.

You have already encountered a CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart) when you signed up for a Web-based e-mail account. A CAPTCHA is a test designed to detect the automated systems used by spammers for registering e-mail accounts. A CAPTCHA is an automatically generated graphic presented to a user who has just submitted information or made a request of a Web server.

CAPTCHAs require that a user view a distorted text image, and then enter the text shown in the graphic into a form field before he or she is allowed to proceed with a transaction. The distorted image is easily recognizable by humans, but is a difficult challenge for a machine. When the user provides the correct response to a CAPTCHA, then his or her input is accepted for processing. A CAPTCHA is one way administrators attempt to control spam at the server.

For more information about CAPTCHAs, visit the following sites:

- www.captcha.net

Administrators can also block mail from IP addresses known for sending spam. A blackhole list (also known as a blacklist) is a published list of IP addresses known to be sources of spam. Administrators can use the list to filter out the offending IP addresses. The traffic that is filtered out simply disappears, as if sucked into a black hole.
Another server-side method for trying to control spam is the use of SMTP authentication, in which a valid name and password must be provided each time a message is sent. SMTP authentication can prevent a spammer from illicitly using your mail server to send spam.

On the client side, you can take several actions to reduce the amount of spam you receive:

- You can set up spam filters, or rules, in your e-mail client. A spam filter deletes (or otherwise diverts from your Inbox) e-mail messages based on the text in the Subject line, the To and From fields, and even the body of the message.
- Many Web-based e-mail clients such as Gmail include spam filters you can configure to look for specific words. Many e-mail clients feature buttons or links that allow you to mark specific messages as spam. Gmail also has a folder called Spam designed to receive messages the server recognizes as spam. Sign in to your Gmail account and click the Spam folder to review your options.
- You can use a third-party spam filter to help control the problem. Popular free spam filters include POPFile (http://getpopfile.org/docs/doku.php) and K9 (http://keir.net/k9.html). Such third-party filters have the ability to store e-mail in a database or queue, then scan it for offending items (for example, inappropriate language). The application deletes spam and forwards legitimate e-mail to its destination. Such technology is often called store-and-forward technology.
- You can contact your ISP or systems administrator regarding spam; these parties may have or pursue solutions.

When you set up rules for controlling spam in your e-mail client, consider the following points:

- Specifying multiple conditions for the same rule means that all conditions must be met before a message becomes subject to the instructions in the rule.
- Specifying a condition that is too broad may result in false positives. A false positive is a situation in which a legitimate e-mail message is filtered out.
- Spammers often find ways to evade spam filters.

In the following lab, you will create a spam filter in Thunderbird. Suppose your company’s personnel director is receiving several spam e-mail messages a day regarding free credit reports. You can set up a spam filter for her in Thunderbird to automatically delete messages that contain the words "free credit report" in the Subject line.

Lab 7-8: Setting up a spam filter in Thunderbird

In this lab, you will create a spam filter in Thunderbird.

1. Restore the Thunderbird window.

2. First, you will set up a rule that will filter spam. Select Tools | Message Filters to display the Message Filters dialog box. Click the New button to display the Filter Rules dialog box, as shown in Figure 7-14.
3. Type **Free Credit Report** in the Filter Name text box to name the filter.

4. Click the **Match All Of The Following** radio button. Notice that the first and second drop-down lists default to **Subject** and **Contains**, respectively.

5. Click in the text box to the right of **Contains**, then type **free credit report**. This step specifies the condition for the rule — the Subject line of an incoming message must contain the words “free credit report” in the order specified before Thunderbird will take any action.

6. In the Perform These Actions section, display the second drop-down list (the list that currently displays your e-mail address), then select **Trash**. This step specifies that when Thunderbird encounters a message that meets the specified condition, it will move the message to your Trash folder. Your Filter Rules dialog box should resemble Figure 7-15.
7. The Free Credit Report filter now specifies that all messages containing the words "free credit report" in the Subject line, in the order specified, will be moved to your Trash folder. Click OK to save the new rule, then close the Message Filters dialog box.

8. Next, you will test your spam filter. Send the spam message to yourself, or choose a partner with whom to perform the remainder of this lab. Create a new e-mail message and address it to yourself or your partner.

9. In the Subject line, type the following: **Call now for a free credit report!**

10. Send the message, and be sure that your partner sent the same message to you.

11. Click the Get Mail button to check the POP server for incoming mail. Notice that no new messages display in your Inbox. You received the message sent by your lab partner, but it was automatically sent to your Trash folder.

12. Click the Trash folder to verify that the message has been diverted.


The next lesson will discuss other actions you can take to minimize the spam you receive.

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**Storing e-mail messages**

Most e-mail clients have a default folder structure that includes an Inbox folder, a folder for sent messages, a folder for drafts and a folder for deleted messages. Microsoft Outlook and Windows Live Mail include an Outbox folder, in which they store messages that are queued for sending but have not yet been sent. You can also create and arrange additional folders for organizing your messages, and you can move and copy messages to any of your folders.

**E-mail storage locations**

Windows Mail writes all e-mail folders to your local hard drive. The specific location of stored messages varies by operating system. In Windows Vista, Windows Mail stores your mail folders in the following folder:

```
C:\Users\<username>\AppData\Local\Microsoft\Windows Live Mail\<account>
```

This folder contains each of your mail folders, and each of the files within the folders has an .eml file name extension.

Mozilla Thunderbird also writes all e-mail folders to your local hard drive and the location of stored messages also varies by operating system. In Windows 7, Thunderbird stores your mail folders in the following folder:

```
C:\Users\<username>\AppData\Roaming\Thunderbird\Profiles\xxxxxxxxxx.default\Mail\Local Folders
```

This folder contains a file for each of your mail folders, and each of these files has an .msf file name extension.

Writing e-mail folders to files on a local disk makes your e-mail easily transportable. If you set up Windows Live Mail or Thunderbird on a new computer, you can copy the respective Local Folders folder from your old computer to the new one, and keep all your old e-mail.
**E-mail storage using IMAP, Web-based mail and LANs**

E-mail file storage space may be limited if you use an IMAP server or a Web-based e-mail account, because your messages are stored on the server. Web-based, or cloud, e-mail accounts allot limited storage space on the server, and once that space is used, you must either delete some of your stored messages or purchase additional storage space. You can also use an e-mail client such as Windows Live Mail or Thunderbird to write all of your Web-based e-mail messages to your local hard drive.

In organizations that use proprietary LAN protocols for handling e-mail within the network, messages may also be stored on the server rather than on the user's computer. Many e-mail clients, such as Microsoft Outlook, allow you to archive your e-mail messages. Archiving your mail folders removes them from the server and writes them to your local hard drive. Archived Outlook files have a .pst file name extension. Storing files on your hard drive frees space on the mail server, and having local access to e-mail messages can be useful when the mail server is down.

Having local access to e-mail messages may be especially important for those who use IMAP servers. If a network problem occurs, IMAP server users may not have access to messages for a while unless they have archived messages locally. Remember that IMAP servers do not download messages to your computer automatically. The messages are stored, read and managed on the server unless you choose to download them. People who use IMAP servers should download their messages so that they have backup copies of important information stored on their computers.

When you use Web-based e-mail, your user name and password reside on a third-party server. If someone hacks into the server, the hacker will have your personal information. Web-based e-mail clients do not download messages to your hard drive. Some do not even save a copy of sent messages in your Sent folder unless you indicate that you want to save a copy. To save a copy of your mail folders on your local computer, use an e-mail client such as Windows Live Mail or Thunderbird to read (and download) messages from your Web-based account.

**Personal Information Management (PIM)**

You can use a **personal information management (PIM) program** to schedule appointments and meetings, store contact information, and manage tasks. Examples of PIM programs are Microsoft Outlook, IBM Lotus Organizer, Sage ACT! and CorelCENTRAL. Android, Apple and BlackBerry smartphones all offer PIM tools by default, and many apps can be purchased to expand their functionality.

You can also find freeware versions of PIM software on the Web, but not all versions are stable. Aethera is a freeware PIM package that will run on UNIX/Linux, Windows and Apple OS X operating systems. To learn more about Aethera and download the package, visit [www.thekompany.com/projects/aethera/](http://www.thekompany.com/projects/aethera/).

**Typical uses for PIM**

You can use a PIM program to keep track of appointments and meetings by scheduling them on an electronic calendar. You can schedule recurring appointments and reminders, which sound an alarm or display a dialog box. You can also use a PIM program to track tasks. Figure 7-16 shows a sample calendar containing scheduled appointments.
You can also use a PIM program to store contact information (such as names, addresses, telephone numbers and other pertinent information) for people you call or communicate with via e-mail frequently. Some PIM programs, such as Microsoft Outlook and Aethera, also provide e-mail capabilities you can use to send and receive messages over an intranet or the Internet. Figure 7-17 shows sample contact information in Aethera.

Using a centralized electronic calendar to schedule meetings and reserve resources (such as a meeting room or projector) can streamline office events and prevent scheduling conflicts. Scheduling Webinars or Webcasts on a centralized calendar also informs employees about the upcoming event and can alert IT personnel, who may be called upon to troubleshoot any difficulties.
IT personnel can also examine a centralized calendar to identify the best time to schedule activities, such as installing updates or patches, that might take services offline. An IT department can also publish the scheduled date for such activities and send reminders or notifications to employees if certain services may be unavailable for a period of time.

PIM and smartphones

Smartphones and their predecessor, Personal Digital Assistants (PDAs), can store contact information, help you take notes and keep track of appointments. They can also perform complex calculations, play games, download music, browse the Web and check e-mail.

Smartphones store basic programs such as the operating system, address book, calendar and memo pad in a read-only memory (ROM) chip. As you enter or change data, your changes are saved automatically in your smartphone's random access memory (RAM), which remains intact even after you turn off the unit.

Smartphones are ideal PIMs because they are mobile and offer miniature keyboards for inputting information. Users can use a plastic stylus to make inputting data easier (rather than using their fingers). Users can enter data on the LCD screen by writing with the stylus and by tapping on the touch screen.

All smartphones include some kind of PIM software for performing PIM tasks. These tasks include storing contact information, making lists, taking notes, writing memos, tracking appointments, setting reminder alarms, planning projects, performing calculations and tracking expenses. However, not all smartphones support all of these functions.

Smartphone PIM tools work best when they work in tandem with traditional desktop or laptop computers. The information you enter into your smartphone can be synchronized with the data you enter into your PIM software on your desktop or laptop system in order to make the most effective use of both your smartphone and your computer. Many smartphones can install PIM software that can also be installed on your computer. Mainstream PIM packages that support data synchronization are also available. These tools, such as Lotus Organizer and Microsoft Outlook, keep both your smartphone and your computer up to date.

Data can be synchronized between a smartphone and a computer using a USB connector. With the correct PIM package, many smartphones can also use wireless networks to transfer files to and from a computer or computer network.
Case Study

Mastering the Art of E-Mail

Isabella is the sales manager for a large corporation, which has just hired 50 new sales interns. Isabella is scheduled to give a presentation to the interns about e-mail writing etiquette. She wants to convey the importance of writing professional e-mail messages to clients within and outside the organization.

Isabella is creating her presentation, and so far it emphasizes the following points:

- Write meaningful text in the subject line.
- Write an appropriate greeting and closing.
- Keep the message fairly brief (no more than four or five paragraphs).
- Ensure that the tone of the message is clear and reasonable.
- Use words that convey respect and show restraint.
- Proofread and spell-check the message before sending it.

* * *

As a class, discuss this scenario and answer the following questions.

- What are the merits or reasons for each of the tips in the list above?
- What other tips should Isabella provide to help the sales interns write professional e-mail messages?

Lesson Summary

Application project

After having used two e-mail clients, which do you prefer? Which one would you recommend for your company? As with browsers, many companies choose a standard e-mail client for all employees to reduce help-desk calls and potential problems.

Suppose you are telecommuting and want your e-mail client at home to be configured for both your work and personal e-mail accounts. To accomplish this task, configure either Windows Live Mail or Mozilla Thunderbird with two e-mail accounts. If you conduct this Application Project during class, use the e-mail account information you used in this lesson’s labs for your work account. Create a second account on the e-mail client using an additional account, such as a free e-mail account from Yahoo! Mail (www.yahoo.com), or another account from Windows Live Hotmail (www.hotmail.com) or Gmail (http://mail.google.com/mail). Your free e-mail accounts will be available to you after class, but you should record the configuration information. After you finish, delete both accounts from your e-mail client, and be sure to download and delete all messages.
Skills review

In this lesson, you learned about the functions of e-mail, and you configured and used various e-mail clients. You identified common e-mail components; you created, sent, received and viewed messages and attachments; and you identified ways to use e-mail effectively in the workplace. You also identified modern e-mail problems and solutions, and you discussed the functions of personal information management (PIM) software.

Now that you have completed this lesson, you should be able to:

✓ 1.5.14: Explain the function of a CAPTCHA when requesting services from the Web.
✓ 1.6.1: Configure an e-mail client to send and receive e-mail, including SMTP, POP3, IMAP, Web-based e-mail support.
✓ 1.6.2: Distinguish between MIME, S/MIME and PGP/GPG.
✓ 1.6.3: Configure an appropriate e-mail signature and identify its usefulness in a business setting.
✓ 1.6.4: Identify the usefulness of an e-mail thread, and when it is appropriate.
✓ 1.6.5: Identify spam and take steps to manage it, including creation of client-side filters and SMTP authentication.
✓ 1.6.6: Define blind copying (BCC).
✓ 1.6.7: Distinguish e-mail forwarding from replying.
✓ 1.6.8: Identify e-mail etiquette, including emoticons, ALL CAPS type.
✓ 1.6.9: Identify ways that e-mail is used in the workplace, including elements of a successful e-mail message (e.g., greeting, central message, action items, conclusion).
✓ 1.6.10: Identify common e-mail issues in the workplace, including harassment, when to use e-mail, e-mail message storage.
✓ 1.6.11: Use "Out of Office" messages for e-mail automatic reply (i.e., autoresponder) services.
✓ 1.6.12: Attach files to e-mail messages.
✓ 1.6.13: Use e-mail to share files and documents within and across organizations.
✓ 1.6.14: Identify concerns for Web-based and IMAP-based e-mail.
✓ 1.6.15: Identify situations in business environments when e-mail is more appropriate than texting for communicating, and vice-versa.
✓ 1.7.6: Identify privacy concerns related to network communications (e.g., e-mail, instant messaging, P2P).
✓ 1.12.1: Identify ways that calendar and scheduling software helps organize IT-based activities.
✓ 1.12.2: Identify Personal Information Management (PIM) productivity applications, including tools for PCs and smartphones.
Lesson 7 Review

1. Name the three elements of an e-mail address.

2. You can receive e-mail, but you cannot send it. What type of e-mail server may be causing the problem?

3. What is the best method for sending the content of a word processor document to another person via e-mail?

4. Define the term netiquette.

5. Why would an alarm feature be useful in PIM software?
1. **snail mail**: Slang term for the standard postal mail service.

2. **IP address**: A unique numerical address assigned to a computer or device on a network.

3. **Message Transfer Agent (MTA)**: A messaging component that routes, delivers and receives e-mail.

4. **Mail Delivery Agent (MDA)**: An e-mail server program that receives sent messages and delivers them to their proper destination mailbox.

5. **user name**: A unique name or number that identifies you when logging on to a computer system or online service. In an e-mail address, the part before the @ symbol.

6. **e-mail client**: An e-mail program that is independent of any specific Web browser, and that you can use to send e-mail messages.

7. **Mail User Agent (MUA)**: A messaging component used as a stand-alone application by the user.

8. **browser e-mail**: E-mail programs such as Outlook Express and Opera Mail that come bundled with a Web browser and with which they may be integrated.

9. **Web-based e-mail**: Free e-mail service from a provider such as Windows Live Hotmail or Yahoo! in which you request a user name. You can access your e-mail from any computer that has access to the Internet.

10. **Multipurpose Internet Mail Extensions (MIME)**: A protocol that enables operating systems to map file name extensions to corresponding applications. Also used by applications to automatically process files downloaded from the Internet.

11. **Header**: A block of Information attached to a piece of data. The first part of a network packet. Can contain network addressing information or additional information that helps computers and applications process data.

12. **Secure MIME (S/MIME)**: Secure version of MIME that adds encryption to MIME data.

13. **Pretty Good Privacy (PGP)**: A method of encrypting and decrypting e-mail messages. It can also be used to encrypt a digital signature.

14. **GNU Privacy Guard (GPG)**: An open-source version of PGP, used for encrypting and decrypting e-mail messages, that does not use patented algorithms.

15. **attachment**: A file that is sent with an e-mail message.

16. **Emoticon**: A combination of characters that, when read sideways, helps convey emotion in an e-mail message.

17. **Spam**: Unsolicited and Unwanted e-mail messages; the online equivalent of junk mail.

18. **CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart)**: A test that uses a word-verification graphic designed to differentiate humans from automated senders during online transactions.

19. **blackhole list**: A published list of IP addresses known to be sources of spam.
20. **spam filter**: An e-mail client program that identifies and filters out spam messages before they reach the e-mail Inbox.

21. **personal information management (PIM) program**: A tool used to Schedule appointments and meetings, store contact information, and manage tasks.

22. **Personal Digital Assistant (PDA)**: A small, handheld computer used for personal information management. The predecessor to the smartphone.
Glossary

4G (fourth generation) — Wireless phone network capable of delivering high-speed broadband Internet access to mobile devices.

4G mobile hotspot — A device that connects a wireless local area network to a wireless phone network at broadband speeds.

absolute URL — A URL that gives the full path to a resource.

ActiveX — An open set of technologies for integrating components on the Internet and within Microsoft applications.

Advanced Research Projects Agency (ARPA) — A U.S. Department of Defense agency that created the first global computer network.

Advanced Research Projects Agency Network (ARPANET) — A computer network, funded by ARPA, that served as the basis for early networking research and was the backbone during the development of the Internet.

Ajax — A programming methodology that uses a number of existing technologies together and enables Web applications to make incremental updates to the user interface without the need to reload the browser page.

anti-virus software — Software that scans disks and programs for known viruses and eliminates them.

applets — Small programs written in Java, which are downloaded as needed and executed within a Web page or browser.

assignment — The appointment of a specific resource to a specific task.

assumption — A factor that is considered to be real or certain for planning purposes.

asymmetric encryption — An encryption method in which two keys (a private key and a public key) are used to encrypt and decrypt a message. Also known as public-key encryption.

attachment — A file that is sent with an e-mail message.

Audio Video Interleave (AVI) — Standard Windows file format for video files.

authentication — The process of verifying the identity of a user who logs on to a system, or the integrity of transmitted data.

backbone — The highest level in the computer network hierarchy, to which smaller networks typically connect.

bandwidth — The amount of information, sometimes called traffic, that can be carried on a network at one time. The total capacity of a line. Also, the rate of data transfer over a network connection; measured in bits per second.

binary file — A file containing data or instructions written in zeros and ones (computer language).

blackhole list — A published list of IP addresses known to be sources of spam.

blog — Short for “Web log.” A collection of personal thoughts posted on a public Web site. Blogging is the act of adding entries to a blog.

Boolean operator — A symbol or word used in Internet searches to narrow search results by including or excluding certain words or phrases from the search criteria.

browser e-mail — E-mail programs such as Outlook Express and Opera Mail that come bundled with a Web browser and with which they may be integrated.

call center — A centralized office used for the purpose of processing a large volume of requests by phone.

CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart) — A test that uses a word-verification graphic designed to differentiate humans from automated senders during online transactions.

cascading style sheets (CSS) — Style sheet language that provides the formatting and ‘look’ of a Web page or document written in a markup language.

change management — The process, tools and techniques that help people implement changes to achieve a desired outcome.

client — An individual computer connected to a network. Also, a system or application (such as a Web browser or user agent) that requests a service from another computer (the server) and is used to access files or documents.
cloud computing — Software, infrastructure and platform services that are hosted by a remote data center and provided to organizations over the Internet.

codec — A compression/ decompression algorithm used by modern video and audio player plug-ins.

collective intelligence — The ability of a group to exhibit a greater degree of intelligence by solving problems collaboratively compared to the intelligence of an individual member.

common field — A field contained in two or more database tables that forms a connection between the tables.

Common Gateway Interface (CGI) — A program that processes data submitted by the user. Allows a Web server to pass control to a software application, based on user request. The application receives and organizes data, then returns it in a consistent format.

constraint — A factor, such as budget or time, that limits a project manager's options.

contact center — A call center that allows consumers to contact agents via avenues other than by telephone.

convergence — The integration of telephony and data technologies.

cookie — A text file that contains information sent between a server and a client to help maintain state and track user activities. Cookies can reside in memory or on a hard drive.

crowdsourcing — A problem-solving model in which a task ordinarily performed by one person is outsourced to a large group or community in order to obtain and analyze large amounts of data.

database — A collection of data that can be sorted and searched using search algorithms.

database administrator — An individual who is responsible for the maintenance and security of an organization's database resources and data.

database management system (DBMS) — A program used to store, access and manipulate database information.

dead link — A hyperlink that, when clicked, sends a Web site visitor to a page or resource that does not exist on the server.

decryption — The process of converting encrypted data back to its original form.

deep URL — A URL that includes a path past the domain into the folder structure of a Web site.

digital certificate — A password-protected, encrypted data file containing message encryption, user identification and message text. Used to authenticate a program or a sender's public key, or to initiate SSL sessions. Must be signed by a certificate authority (CA) to be valid.

digital signature — An electronic stamp added to a message that uniquely identifies its source and verifies its contents at the time of the signature.

Digital Subscriber Line (DSL) — A high-speed direct Internet connection that uses all-digital networks.

disk cache — Storage space on a computer hard disk used to temporarily store downloaded data.

domain name — An IP address represented in words.

domain name server — A server that resolves domain names into IP addresses.

Domain Name System (DNS) — A system that maps uniquely hierarchical names to specific Internet addresses.

dynamic — Always changing.

e-mail client — An e-mail program that is independent of any specific Web browser, and that you can use to send e-mail messages.

emoticon — A combination of characters that, when read sideways, helps convey emotion in an e-mail message.

Encapsulated PostScript (EPS) — File format used for importing and exporting graphics.

encryption — A security technique designed to prevent access to information by converting it into a scrambled (unreadable) form of text.

end-user license agreement (EULA) — A legal contract between the author of software and the end user that defines how the software can be used.

event-driven — Reacting to particular user actions or the browser's completion of a specific task.

extranet — A network that connects enterprise intranets to the global Internet. Designed to provide access to selected external users.

Facebook — The premier social networking site on the Web (www.facebook.com). It enables individuals to communicate individually and connect as groups using various communications tools.

field — A category of information in a database table.

File Transfer Protocol (FTP) — An Internet protocol used to transfer files between computers; allows file transfer without corruption or alteration.
**firewall** — A security barrier that controls the flow of information between the Internet and a private network. A firewall prevents outsiders from accessing an enterprise’s internal network, which accesses the Internet indirectly through a proxy server.

**folksonomy** — The practice of categorizing online content through tags.

**foreign key** — A field in a related database table that refers to the primary key in the primary table.

**fully qualified domain name (FQDN)** — The complete domain name of an Internet computer, such as www.CIWcertified.com.

**Gantt chart** — A horizontal bar chart that graphically displays project tasks and durations.

**gateway** — A node on a network that serves as a portal to other networks.

**geolocation** — An HTML5 application programming interface that allows developers to retrieve the geographical location information for a client-side device.

**GNU Privacy Guard (GPG)** — An open-source version of PGP, used for encrypting and decrypting e-mail messages, that does not use patented algorithms.

**Google** — The de facto standard for search engine sites (www.google.com).

**Graphics Interchange Format (GIF)** — A graphical image file format commonly used in HTML documents.

**greenfield** — An approach in which a project lacks any constraints imposed by prior development.

**hash** — A number generated by an algorithm from a text string. Also known as a message digest.

**hash encryption** — An encryption method in which hashes are used to verify the integrity of transmitted messages. Also known as one-way encryption.

**header** — A block of information attached to a piece of data. The first part of a network packet. Can contain network addressing information or additional information that helps computers and applications process data.

**help desk technician** — An individual who diagnoses and resolves users’ technical hardware and software problems.

**hexadecimal** — A base-16 number system that allows large numbers to be displayed by fewer characters than if the number were displayed in the regular base-10 system. In hexadecimal, the number 10 is represented as the letter A, 15 is represented as F, and 16 is represented as 10.

**home page** — The first Web page that displays when you access a domain.

**host** — A computer that other computers can use to gain information. In network architecture, a host is a client or workstation.

**hypertext link** — Highlighted or underlined text in a Web page that, when clicked, links the user to another location or Web page.

**Hypertext Transfer Protocol (HTTP)** — The protocol for transporting HTML documents across the Internet.

**illicit server** — An application that installs hidden services on systems. Illicit servers consist of “client” code and “server” code that enable the attacker to monitor and control the operation of the computer infected with the server code.

**index** — A catalog of the contents of a database. Each entry identifies a unique database record.

**Information Technology (IT)** — The management and processing of information using computers and computer networks.

**instant messaging (IM)** — A computer-based method of communication in which users can type and view messages sent to one or more recipients, and view the responses immediately.

**Integrated Services Digital Network (ISDN)** — A communication standard for sending voice, video or data over digital telephone lines.

**interactive** — The characteristic of some hardware and software, such as computers, games and multimedia systems, that allows them to respond differently based on a user’s actions.

**Internet** — A worldwide network of interconnected networks.

**Internet Assigned Numbers Authority (IANA)** — The international organization responsible for allocation of IP addresses. Part of the Internet Corporation for Assigned Names and Numbers (ICANN).

**Internet Control Messaging Protocol (ICMP)** — A subset of Internet Protocol that is most often used to determine whether a computer can communicate with the rest of the network.

**Internet Message Access Protocol (IMAP)** — A protocol that resides on an incoming mail server. Similar to POP, but is more powerful. Allows sharing of mailboxes and multiple mail server access. The current version is IMAP4.

**Internet Protocol (IP)** — The data transmission standard for the Internet. Every computer connected to the Internet has its own IP address, which enables a packet of data to be delivered to a specific computer.
Internet Service Provider (ISP) — An organization that maintains a gateway to the Internet and rents access to customers on a per-use or subscription basis.

intranet — An internal network based on TCP/IP protocols, accessible only to users within a company.

IP address — A unique numerical address assigned to a computer or device on a network.

Java — An object-oriented programming language developed by Sun Microsystems that is fully cross-platform functional.

Joint Photographic Experts Group (JPEG) — A graphical image file format commonly used for photographs.

junction table — A database table containing foreign-key fields that refer to the primary-key fields from the primary tables in a many-to-many relationship.

key — A variable value, such as a numeric code, that uses an algorithm to encrypt and decrypt data. Some applications encrypt and decrypt with the same key, whereas other applications use a pair of keys.

keyword — A word that appears on a Web page and is used by search engines to identify relevant URLs. Some words, such as “the” or “and,” are too common to be used as keywords.

list server — A server that collects and distributes information from an authorized group of participants, called a listserv group.

listserv group — Users who subscribe to an e-mailing list through a list server.

LiveScript — The Netscape-developed scripting language that was the predecessor to JavaScript.

local area network (LAN) — A group of computers connected within a confined geographic area.

lossless compression — A type of data file compression in which all original data can be recovered when the file is decompressed.

lossy compression — A type of data file compression in which some file information is permanently eliminated.

Mail Delivery Agent (MDA) — An e-mail server program that receives sent messages and delivers them to their proper destination mailbox.

Mail User Agent (MUA) — A messaging component used as a stand-alone application by the user.

malware — Abbreviation for malicious software. Malware is software designed to harm computer systems.

many-to-many relationship — In databases, a relationship in which one record in Table A can relate to many matching records in Table B, and vice versa.

mashup — A Web page that integrates content and scripts from multiple Web sites to create new applications.

Message Transfer Agent (MTA) — A messaging component that routes, delivers and receives e-mail.

meta search engine — A search engine that scans Web pages for <meta> tag information.

microformat — A data format that adds human-readable metadata to existing code so that the data can be processed by other software.

milestone — The end of a stage that marks the completion of a task or series of related tasks, resulting in a key deliverable.

mobile application developer — An individual who develops Web sites and/or applications for mobile devices.

mobile computing — A person’s ability to use technology in non-stationary positions and in transit.

mobile device repair technician — An individual who troubleshoots and repairs mobile device hardware components.

modem — Abbreviation for modulator/demodulator. An analog device that enables computers to communicate over telephone lines by translating digital data into audio/analog signals (on the sending computer) and then back into digital form (on the receiving computer).

Moving Picture Experts Group (MPEG) — High-quality audio and video file compression format.

MPEG-1 Audio Layer-3 (MP3) — Popular compression standard for audio files; retains most of the sound quality of the source.

Multipurpose Internet Mail Extensions (MIME) — A protocol that enables operating systems to map file name extensions to corresponding applications. Also used by applications to automatically process files downloaded from the Internet.

Musical Instrument Digital Interface (MIDI) — A standard computer interface for creating and playing electronic music. It allows computers to re-create music in digital format for playback.

National Science Foundation (NSF) — An independent agency of the U.S. government that promotes the advancement of science and engineering.

needs analysis — Determining a customer’s needs by acquiring information, processing and evaluating the
information, then creating a plan of action to address the needs.

**network** — A group of two or more computers connected so they can communicate with one another.

**network engineer** — An individual who manages and maintains a network infrastructure.

**network interface card (NIC)** — A circuit board within a computer’s central processing unit that serves as the interface enabling the computer to connect to a network.

**Network News Transfer Protocol (NNTP)** — The Internet protocol used by news servers that enables the exchange of newsgroup (Usenet) articles.

**newsgroup** — On Usenet, a subject or other topical interest group whose members exchange ideas and opinions. Participants post and receive messages via a news server.

**node** — Any entity on a network that can be managed, such as a system, repeater, router, gateway, switch or firewall. A computer or other addressable device attached to a network; a host.

**non-repudiation** — The security principle of providing proof that a transaction occurred between identified parties. Repudiation occurs when one party in a transaction denies that the transaction took place.

**object** — An element on a Web page that contains data and procedures for how that item will react when activated. On a Web page, an object is typically a multimedia presentation.

**object-oriented programming (OOP)** — Programming concept based on objects and data and how they relate to one another, instead of logic and actions; C++ and Java are OOP languages.

**Ogg Vorbis (.ogg)** — A free, open-source alternative to the MP3 compression format for audio files; creates smaller, faster downloading files.

**one-to-many relationship** — In databases, a relationship in which a record in Table A can have multiple matching records in Table B, but a record in Table B has only one matching record in Table A.

**one-to-one relationship** — In databases, a relationship in which each record in Table A can have only one matching record in Table B, and vice versa.

**ontology** — The study of how a particular knowledge domain, or system, is organized. An ontology is the product of an ontological study.

**open source** — A peer-based development process describing organizations and products that provide free source code to the development community at large with the goal of developing better products; includes Apache Web server and Linux.

**open-source license** — A “copyleft” license that removes restrictions on the use and distribution of the licensed product.

**P2P** — A peer-to-peer network on the Internet.

**packet** — Data processed by protocols so it can be sent across a network.

**patch** — Programming code that provides a temporary solution to a known problem, or bug.

**patent** — A set of exclusive rights granted to an inventor for a fixed period of time upon disclosure of the invention.

**PC repair technician** — An individual who installs, modifies and repairs personal computer (PC) hardware components.

**peer-to-peer network** — A network in which each computer has both server and client capabilities.

**Personal Digital Assistant (PDA)** — A small, handheld computer used for personal information management. The predecessor to the smartphone.

**personal information management (PIM) program** — A tool used to schedule appointments and meetings, store contact information, and manage tasks.

**plug-in** — A program installed in the browser to extend its basic functionality. Allows different file formats to be viewed as part of a standard HTML document.

**podcast** — The use of audio or video digital-media files that are distributed through Web feeds to subscribed users.

**Point-to-Point Protocol (PPP)** — A protocol that allows a computer to connect to the Internet over a phone line.

**Point-to-Point Protocol over Ethernet (PPPoE)** — A protocol that implements PPP on top of the Ethernet architecture to connect an entire network to the Internet.

**pop-under window** — A small browser window that appears behind the browser window you are viewing.

**pop-up window** — A small browser window that appears in front of the browser window you are viewing.

**Portable Document Format (PDF)** — A file format that can be transferred across platforms and retain its formatting; designated by the file name extension .pdf.

**Portable Network Graphics (PNG)** — An open source graphical image file format created to replace GIFs.
Post Office Protocol (POP) — A protocol that resides on an incoming mail server. The current version is POP3.

presence — A status indicator that conveys a person’s willingness and ability to engage in communications.

Pretty Good Privacy (PGP) — A method of encrypting and decrypting e-mail messages. It can also be used to encrypt a digital signature.

primary key — A field containing a value that uniquely identifies each record in a database table.

program management — The process of managing multiple interdependent projects to improve the performance of an organization.

project — A sequence of tasks that must be accomplished within a certain time frame to achieve a desired result.

project management — The practice of applying skills and processes to activities in order to meet deadlines and achieve desired results.

project schedule — A document that lists the planned dates for performing tasks and meeting goals defined in a project plan.

proprietary software — Software that is the legal property of an entity.

query — A question posed by a user to a database to request database information. The database returns the query results based on the criteria supplied by the user in the query.

QuickTime — A plug-in developed by Apple Computer for storing movie and audio files in digital format.

QuickTime Movie (MOV) — Standard file format for Apple QuickTime; uses the .mov, .moov or .qt file name extension.

record — A collection of information in a database table consisting of one or more related fields about a specific entity, such as a person, product or event.

relational database — A database that contains multiple tables related through common fields.

relationship — A connection between two or more database tables that is based on a field that the tables have in common.

relative URL — A URL that gives an abbreviated path to a resource using the current page as a starting position.

replication — The practice of copying data from one source, such as a database, to another.

Request for Comments (RFC) — A document published by the IETF that details information about standardized Internet protocols and those in various development stages.

resource — A person, department or device needed to accomplish a task.

Return On Investment (ROI) — Profit earned as a result of a project relative to the value of resources required to complete it.

Rich Text Format (RTF) — Portable text file format created by Microsoft that allows image insertion and text formatting; an almost universal format.

root-level server — A server at the highest level of the Domain Name System.

router — A device that routes packets between networks based on network-layer addresses; determines the best path across a network. Also used to connect separate LANs to form a WAN.

scalable — The ability for a system to function well when its workload is increased or hardware is added to meet user need.

scope — The goals and tasks of a project, and the work required to complete them.

scope creep — Gradual increases in project scope that can undermine the success of a project.

screen saver — A graphic or moving image that appears on your screen when your computer is idle.

search engine — A powerful software program that searches Internet databases for user-specified information.

search engine optimization (SEO) — The process of improving the volume and quality of traffic to a Web site by structuring content to improve search engine ranking. A specific activity of Internet marketing.

Secure Copy (SCP) — A program used with Secure Shell (SSH) to transfer files between systems.

Secure MIME (S/MIME) — Secure version of MIME that adds encryption to MIME data.

Secure Sockets Layer (SSL) — A protocol that provides authentication and encryption, used by most servers for secure exchanges over the Internet. Superseded by Transport Layer Security (TLS).

security analyst/consultant — An individual who examines an organization’s security requirements and determines the necessary infrastructure.

security manager — An individual who manages the security measures used to protect electronic data.
semantic Web — A Web 2.0 implementation by which Web data is contextualized with the addition of machine-readable metadata.

SEO analyst — An individual who determines the visibility of Web sites across multiple clients and search engines.

server — A computer in a network that manages the network resources and provides, or serves, information to clients.

server administrator — An individual who manages and maintains network servers.

shared domain — A hosting service that allows multiple entities to share portions of the same domain name.

Simple Mail Transfer Protocol (SMTP) — The Internet standard protocol for transferring e-mail messages from one computer to another.

smartphone — A mobile phone with advanced computing ability and Internet connectivity. Smartphones combine a mobile phone, camera, video recorder, global positioning system, touchscreen, Web browser and wireless high-speed Internet connectivity into one device.

snail mail — Slang term for the standard postal service.

social networking — The practice of creating networks of friends, associates and clients who can discuss topics in common. Online social networking is a powerful concept used by individuals and businesses worldwide.

spam — Unsolicited and unwanted e-mail messages; the equivalent of junk mail.

spam filter — An e-mail client program that identifies and filters out spam messages before they reach the e-mail Inbox.

spim — Spam that is delivered through instant messaging.

spyware — A software application secretly placed on a user’s system to gather information and relay it to outside parties, usually for advertising purposes.

SSH File Transfer Protocol (S/FTP) — A file transfer protocol that allows the encryption of transmissions using the Secure Shell (SSH) protocol.

SSL/TLS-enabled FTP (FTPS) — FTP that runs on an SSL/TLS-secured connection.

stakeholder — A person or group with an interest in a project, and with the power to exert influence (either positive or negative) over the project and affect results.

standard — A definition or format that has been approved by a recognized standards organization.

Statement Of Work (SOW) — A contract to initiate a project; the contract contains project goals and specifies how those goals will be met.

streaming media — A continuous flow of data, usually audio or video files, that assists with the uninterrupted delivery of those files into a browser.

Structured Query Language (SQL) — A language used to create and maintain professional, high-performance corporate databases.

symmetric encryption — An encryption method in which the same key is used to encrypt and decrypt a message. Also known as private-key encryption.

table — A collection of data about a limited topic, organized into rows and columns in a database.

tablet — A powerful mobile computer similar to a smartphone, but with a larger touchscreen. Tablet computers typically do not have phone service, but are capable of high-speed Internet connections.

Tagged Image File Format (TIFF) — Commonly used graphic file format, developed by Aldus Corporation; uses the .tif or .tiff file name extension.

task — A unit of work that must be accomplished during the course of a project.

text messaging — A method of person-to-person communication in which users type short text messages from mobile phones.

"The Right to Be Forgotten" — An argument that asks "Do people have the right to remove damaging information about themselves on the Internet so the information can be forgotten?"

top-level domain — The group into which a domain is categorized, by common topic (company, educational institution) and/or geography (country, state).

trackback — A method by which a blogger receives notification when other bloggers link to his or her blog entry.

Transmission Control Protocol/Internet Protocol (TCP/IP) — A suite of protocols that turns data into blocks of information called packets, which are then sent across the Internet. The standard protocol used by the Internet.

Transport Layer Security (TLS) — A protocol based on SSL 3.0 that provides authentication and encryption, used by most servers for secure exchanges over the Internet.

trojan — A program disguised as a harmless application that actually produces harmful results.
Twitter — A social networking and blogging site that allows individuals to communicate via short messages (www.twitter.com).

typosquatting — The unethical practice of registering domain names very similar to those of high-volume sites in hopes of receiving traffic from users seeking the high-volume site who mistakenly enter an incorrect URL in their browsers.

unified communications (UC) — A business trend that seeks to simplify and integrate all forms of communication. Also, a set of technologies that enable voice to be converted into text, and vice versa.

Uniform Resource Identifier (URI) — A standardized method of referring to a resource using a text string.

Uniform Resource Locator (URL) — A text string that specifies an Internet address and the method by which the address can be accessed.

update — A file or collection of tools that resolves system liabilities and improves software performance.

Usenet (User Network) — A collection of thousands of Internet computers, newsgroups and newsgroup members using Network News Transfer Protocol (NNTP) to exchange information.

user name — A unique name or number that identifies you when logging on to a computer system or online service. In an e-mail address, the part before the @ symbol.

vector graphics — Resizable images that are saved as a sequence of vector statements, which describes a series of points to be connected.

viewer — A scaled-down version of an application; designed to view and print files.

virtual domain — A hosting service that allows a company to host its domain name on a third-party ISP server.

Virtual Network Computing (VNC) — A program that allows you to control a computer at a remote location.

virus — A malicious program that replicates itself on computer systems, usually through executable software, and causes irreparable system damage.

Visual Basic — The Microsoft graphical user interface (GUI) programming language used for developing Windows applications. A modified version of the BASIC programming language.

Visual Basic Script (VBScript) — Scripting language from Microsoft derived from Visual Basic; used to manipulate ActiveX scripts.

Voice over IP (VoIP) — A technology that converts voice into data packets for transmission over a packet-switched IP network. Allows the use of the Internet for real-time voice and video traffic.

Waveform (WAV) — Windows standard format for audio files.

Web 2.0 — A concept referring to the changing trends in the use of WWW technology and Web design that have led to the development of information-sharing and collaboration capabilities.

Web application developer — An individual who develops primarily server-side Web applications.

Web architect — An individual who creates the overview plan of a Web site’s development.

Web browser — A software application that enables users to access and view Web pages on the Internet.

Web feed — A data format for delivering Web content that is updated frequently.

Web marketing manager — An individual who develops and implements plans to exploit the Internet for marketing and sales opportunities.

Web page — An HTML document containing one or more elements (text, images, hyperlinks) that can be linked to or from other HTML pages.


Web site analyst — An individual who analyzes Web site statistics to determine the site’s effectiveness.

Web site designer — An individual who is responsible for the organization and appearance of a Web site.

Web site manager — An individual who manages a Web development team.

Web-based e-mail — Free e-mail service from a provider such as Windows Live Hotmail or Yahoo! in which you request a user name. You can access your e-mail from any computer that has access to the Internet.

Webcast — An audio and/or video Web event that is distributed over the Internet.

Webinar — An interactive Web-based seminar or training session.

wide area network (WAN) — A group of computers connected over an expansive geographic area so their users can share files and services.

wiki — A page or collection of Web pages that can be viewed and modified by anybody with a Web browser and access to the Internet.
**wireless access point (AP)** — A device that enables wireless systems to communicate with each other, provided that they are on the same network.

**wizard** — A tool that assists users of an application in creating documents and/or databases based on styles and templates. Also a tool that guides users step-by-step through a software installation process.

**World Wide Web (WWW)** — A set of software programs that enables users to access resources on the Internet via hypertext documents.

**worm** — A self-replicating program or algorithm that consumes system resources.

**xDSL** — Collectively, the variations of Digital Subscriber Line (DSL), which include ADSL, RADSL and HDSL.

**XMLHttpRequest** — An application programming interface (API) that is used to transfer XML and other text data between a Web server and browser.
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