

CIW v5 Foundations

Mega Guide

Prepare With Confidence

This PrepLogic Mega Guide was written by certified subject matter experts and published authors to provide you accurate, in-depth exam coverage. All exam objectives are covered in detail, giving you the knowledge and confidence you need to pass your exam.



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Domain 1: Internet Business Foundations – 35%

1.1. Identify job roles in the Information Technology (IT) industry, including the responsibilities, tasks and skills they require.

IT industry job roles

The responsibilities, tasks and common duties of the variety of job roles that exist in the Information Technology industry should be recognized by those who will take the CIW Foundations exam. Often these job roles will be mentioned, by name, in employment postings; just as often you may have to read the details of a job listing to place the position within one of these roles.

Web site designer

The user interface and the overall visual appearance of the site are created by the Web site designer.

Web architect

The Web architect creates the plan for development and support of the Web site and often acts as the project manager in charge of site development, who will pull together the talents of many other individuals to create a finished product.

Web application developer

The Web application developer uses programming languages to create the server-side programming that makes a Web site dynamic. Some of the languages used by the Web application developer include C#, Java, PHP, Perl and Visual Basic Script.

Web site analyst

During the creation of a Web site or after a site has been in use for some time, it is desirable to learn whether or not the site is performing as expected. The role of a Web site analyst is to report on, and make recommendations about, a site's performance through Web analysis tools, surveys and usability evaluations.

Web site manager

The Web site manager is commonly responsible for keeping the Web site running smoothly. By leading a team of Web professionals (sometimes performing all of the roles described above) the Web site manager is able to keep the site up to date, correct style or content errors and generally keep the site functioning as an extension of the business or organization.

Database administrator

Most dynamic Web sites retrieve or store information in a database. Almost any popular Web site that you could name is actually a user interface for a complex database. The database administrator is responsible for the design, maintenance and security of the information kept in the database.

Server administrator

The server administrator is responsible for the Web site infrastructure. If the server computer which runs, stores and manages the Web site crashes or becomes otherwise unavailable, the Web site itself also becomes unavailable. The server administrator is responsible for keeping such "downtime" to a minimum, and ideally to none at all. The server administrator is responsible for configuring the Web server in the most reliable, secure, easily restored way possibly including uninterruptible power, redundant or mirrored servers and tape backup of the Web site and database servers.

Network engineer

Even a well designed Web site running on properly maintained servers is useless unless it is placed on a network with access to the Internet (or a local network in the case of an intranet). The network engineer must design and support the devices and transmission media that allow communication between the Web site and visitors who use it.

Security manager

Often, the information being displayed or gathered by a Web site should be suitably secured from just anyone accessing the site. For example, when a purchase is made from an e-commerce Web site using a credit card, special precautions must be taken to safeguard the credit card number and associated personal information. This and other security requirements are the job of a security manager.

PC technician

Building, configuring, installing and repairing computer hardware is the job performed by a PC technician. The PC technician is often also responsible for installing and maintaining the operating system and other software used on a computer. A PC technician should be knowledgeable about computer components, troubleshooting procedures and software configuration.

Help desk technician

The help desk technician is often the first line of support for a computer user. When a user experiences difficulty in accessing a Web site, they will often communicate with a help desk technician to determine the problem and how it can be corrected.

1.2. Identify the infrastructure required to access the Internet, including hardware and software components.

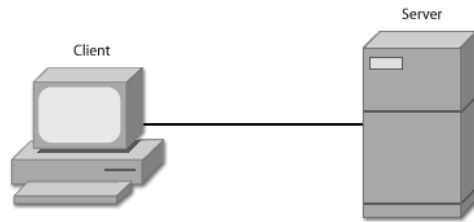
An IT professional certified as a CIW Associate will need to understand the software and hardware components required to access the Internet.

- Client
- Server
- History of the Internet
- Internet infrastructure
- Connection devices
- Consumer Internet connections

Client and Server

Most information systems make use of the client/server model which describes a process where the server offers a file, application or service which is requested by a workstation (the client). Modern networks commonly include several servers and hundreds or thousands of clients.

Common examples of the client/server model include print servers, file servers, authentication servers, Web servers and e-mail servers to which multiple clients connect in order to make use of the offered services.

**Figure 1**

History of the Internet

The Internet, of course, is not a single network, but a vast collection of separate networks that share resources by using common protocols. The origin of the Internet was in 1969 when the Advanced Research Projects Agency Network (ARPANET) was funded by the U.S. Department of Defense. After the U.S. Department of Defense ended ARPANET the National Science Foundation took over the equipment and sites involved and formed NSFnet. Eventually NSFnet was expanded to include sites belonging to businesses, government and military installations, and universities. This large connection of separate networks became our modern Intranet.

All of these separate networks are able to communicate because they use common protocols. Protocols can be best described as rules for communication. The protocol used to communicate on the Internet is the Transmission Control Protocol/Internet Protocol (TCP/IP) which includes the ability to provide an identifier or address for every server or client on the Internet.

The current version of TCP/IP is known as version 4 (IPv4) and uses a 32 bit address format of 4 numbers separated by a period such as 63.146.189.101. A common name for this version of TCP/IP addressing is the "dotted quad".

A newer version of TCP/IP is planned which uses a 128 bit address format allowing for a far greater number of addresses, as well as more sophisticated address management and routing methods. IPv6 will use hexadecimal numbers (using digits of 0 through F rather than 0 through 9) for addressing, like this:

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FEBC:A574:382B:23C1:AA49:4592:4E66:9982
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Internet infrastructure

The Internet client infrastructure requires 6 elements in order to connect to (or make typical use of) the Internet:

- An access device such as a computer, Internet-enabled mobile phone, or PDA.
- An operating system
- TCP/IP for communication on the Internet
- Client software such as a Web browser, chat client, or e-mail application
- A physical Internet connection
- A valid Internet address.

The TCP/IP address is typically associated with a name such as www.preplogic.com so that we can use the Internet without memorizing thousands of numeric addresses.

Connection devices

One of the 6 elements needed for an Internet connection is the physical device that provides the connection. Many people access to the Internet using a dialup connection. A dialup connection is created by a modem which is used to translate the digital signals used by the computer to the analog sounds that are carried by regular telephone lines. The need to carry analog sounds – such as speech – on a regular phone line restricts the speed at which digital information can be carried on that kind of connection.

Faster Internet connections are supported by other connection devices that are considered to be “direct” connections. They can communicate using digital techniques that do not require the translation of signals to sound, and are therefore much faster.

Examples of direct connection types include:

Connection Type	Description	Speed
ISDN	A telephone service that provides digital data transmission over existing copper telephone wiring.	264 Kbps (thousands of bits per second) channels
DSL	The Digital Subscriber Loop is a technology for delivering high-bandwidth digital information using ordinary copper telephone lines. There are several variations of DSL. This is a common consumer Internet connection.	512 Kbps to 32 Mbps (million bits per second)
Cable modem	A high-speed digital connection using the coaxial cable and infrastructure provided by cable television providers. This is also a common consumer Internet connection.	512 Kbps to 52 Mbps
T1	Dedicated high-speed telephone connection which can be configured to carry voice or data.	1.544 Mbps
E1	A digital transmission link used in Europe.	2.048 Mbps
E3	A digital transmission link used in Europe.	34.368 Mbps
T3	Recently renamed to DS-3. This is the equivalent of 28 T1 lines.	44.736 Mbps
Wireless	A network connection using radio waves rather than a network cable. Wireless connections are becoming increasingly popular as a method of consumer Internet connection.	Various, from 2 Mbps to
LAN	Local Area Network using the copper or optic fiber connections employed by an organization to connect servers, clients and other network devices. Commonly the LAN is not the connection to the Internet, but makes use of a router to connect to the Internet.	10 Mbps, 100 Mbps to 1000Mbps
Fiber-optic	This network connection uses light rather than electrons to transmit data. Fiber-optic connections are becoming increasingly popular as a method of consumer Internet connection.	Up to 100 Gbps (Gigabit or 1,000 megabits)

1.3. Define important Internet communications protocols and their roles in delivering basic Internet services.

- Remote access protocols
- Internet service protocols

Remote access protocols

You may recall our definition of a protocol as a set of rules for communication. A connection to the Internet is, in part, accomplished by the use of a variety of protocols, for a variety of purposes. Specifically, these protocols are for the establishment and maintenance of a connection to the internet.

These remote access protocols include the Point-to-Point Protocol (PPP), commonly used to connect via a telephone modem to an Internet Service Provider (ISP); and a similar protocol to establish a connection using an existing Ethernet connection, called Point-to-Point Protocol over Ethernet (PPPoE). The PPPoE is often used when you connect to your Internet access device using a network cable instead of a serial or modem cable.

Internet service protocols

The concept of the protocol extends beyond just the connection to the Internet. The activities that you take part in on the Internet have their rules for communication also. For example the way in which a Web server responds to a request for a Web page is called the Hypertext Transfer Protocol or HTTP. You might recognize this as part of the information that is displayed in your browser address bar, such as: <http://www.testprep.com>.

There are a variety of other such protocols with which you should be familiar – FTP for file transfer, SMTP for simple mail transfer, POP for the post office protocol, IMAP for Internet Message Access and HTTPS for secure Web page requests.

1.4. Identify the basic principles of the Domain Name System (DNS).

Every Web site must have a unique name and address. The Domain Name System (DNS) works to match domain names with Web site addresses.

Domain Name System (DNS)

- Resolves IP addresses into recognizable names
- Inter-changeable information
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