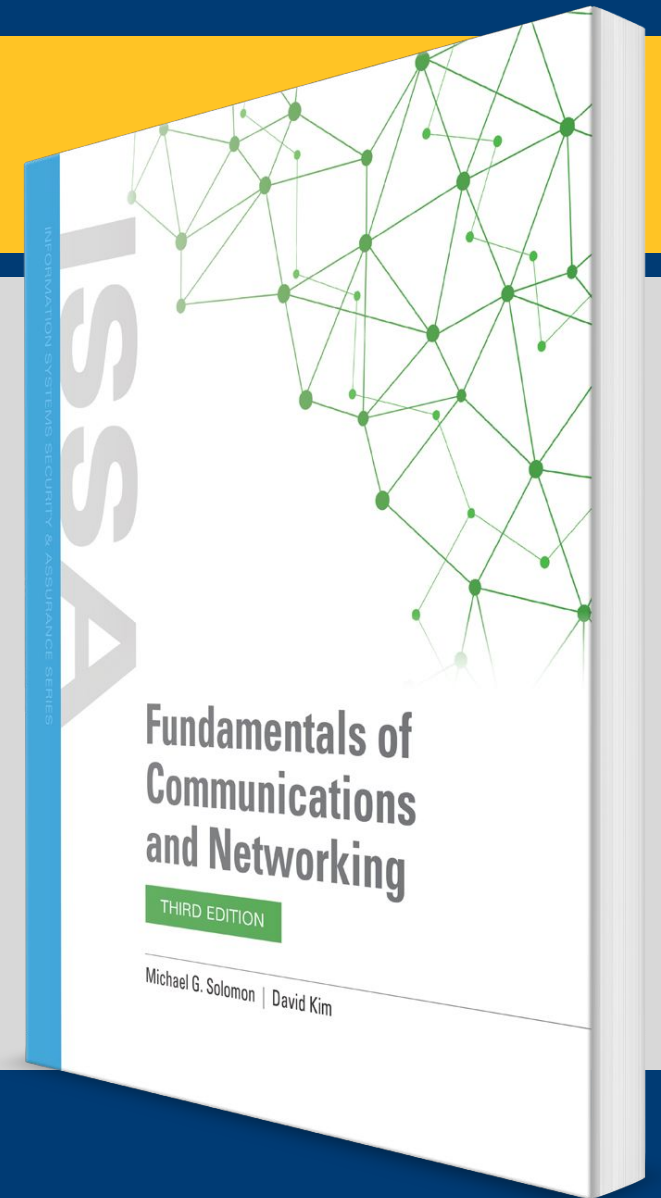


CHAPTER 1

Evolution of Communication Technologies



Learning Objective(s) and Key Concepts

Learning Objective(s)

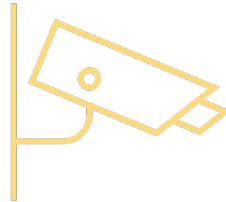
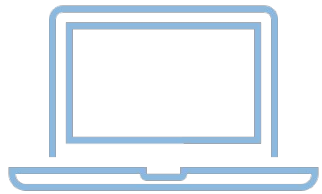
- Explain how the evolution of communications and networking technologies solves business challenges.

Key Concepts

- The hyperconnected world
- The Internet and IP connectivity
- Unified communications (UC)
- Snail mail, store-and-forward messaging, social media, and real-time messaging
- How the web, the Internet of Things (IoT), and cloud computing have transformed business

Today's Hyperconnected World

- Hyperconnectivity
 - Computers, smartphones, tablets, printers, automobiles, refrigerators, doorbells, security systems, and more connect to digital networks
 - People are connected to their homes and offices more than ever before



Today's Hyperconnected World (Cont.)

Hyperconnectivity Advantages

- Few transactions require a physical presence
- Ability for remote transactions applies to both personal and business activities



Hyperconnectivity Drawbacks

- People frequently check their smartphones
- Expectation that everyone is online, connected, and available all the time
- Difficult to put phone down and focus on face-to-face conversations
- Information overload
- Is a growing challenge to business operations

Evolution from Analog to Digital to Internet and IP

Analog

- Telegraph
- Telephone
- Answering machine
- Fax machine

Digital

- Computer
- Smartphone
- Internet
- Broadband/wireless

Network with Analog and Digital Segments

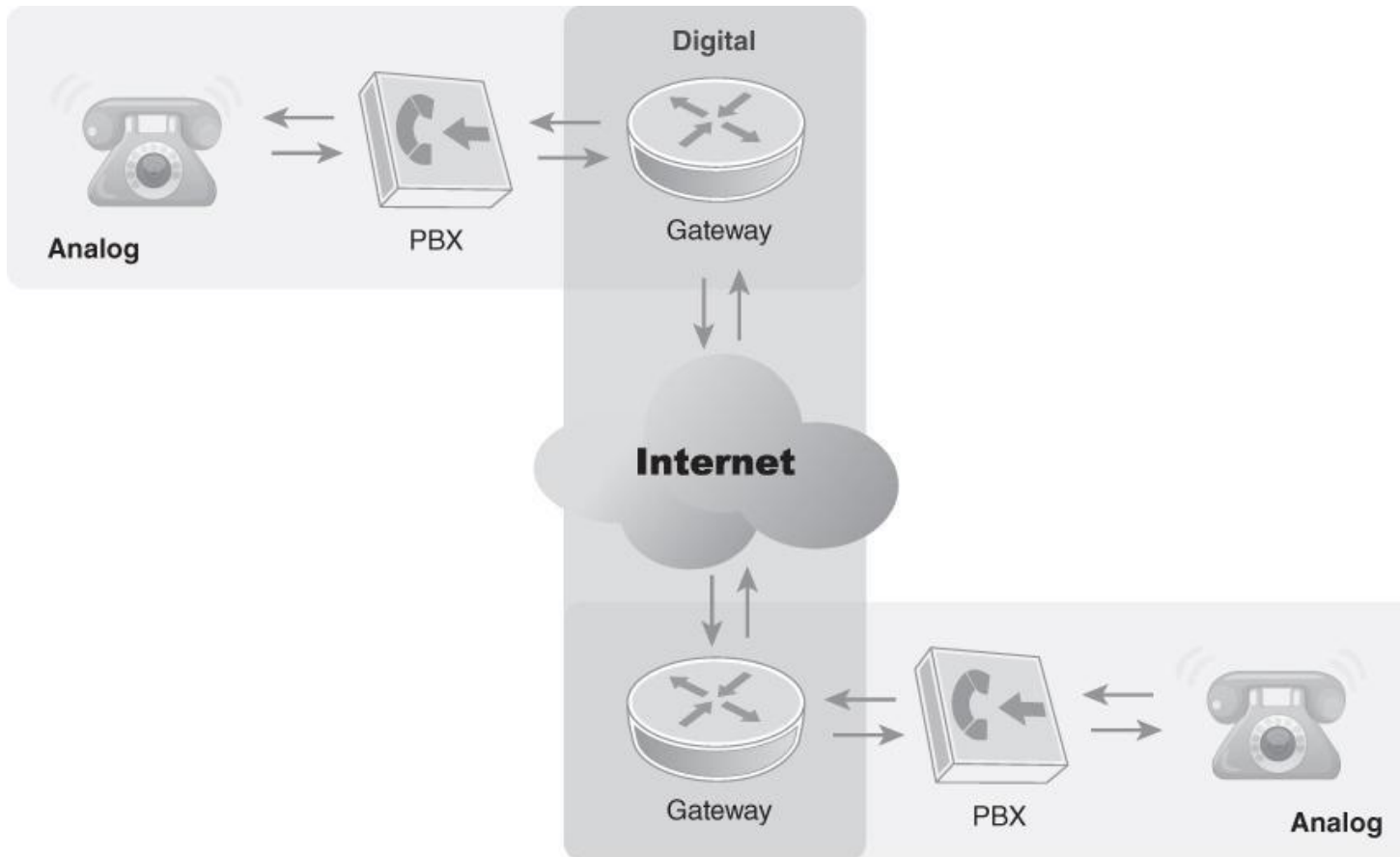


FIGURE 1-2 Network with analog and digital segments.

Devices that Use Wired and Wireless Connections to the Internet

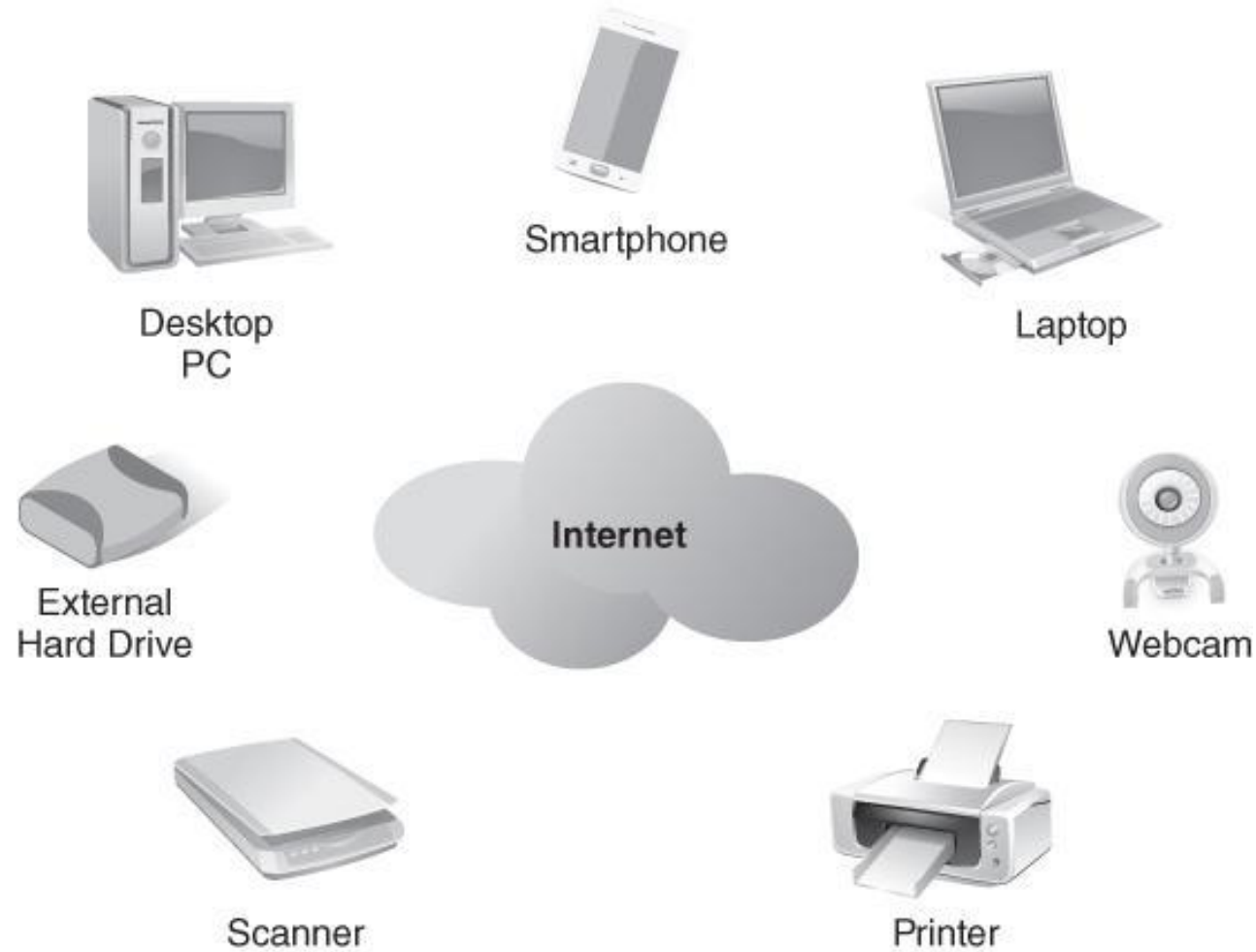


FIGURE 1-4 Devices that use wired and wireless connections to the Internet.

How Unified Communications Connect People and Businesses (1 of 2)

Business Process Management (BPM)

- Streamlines business processes
- Minimizes amount of information users receive
- Emphasizes process flow, required information, and process automation
- Promotes better decision making, competitive advantage, and customer responsiveness

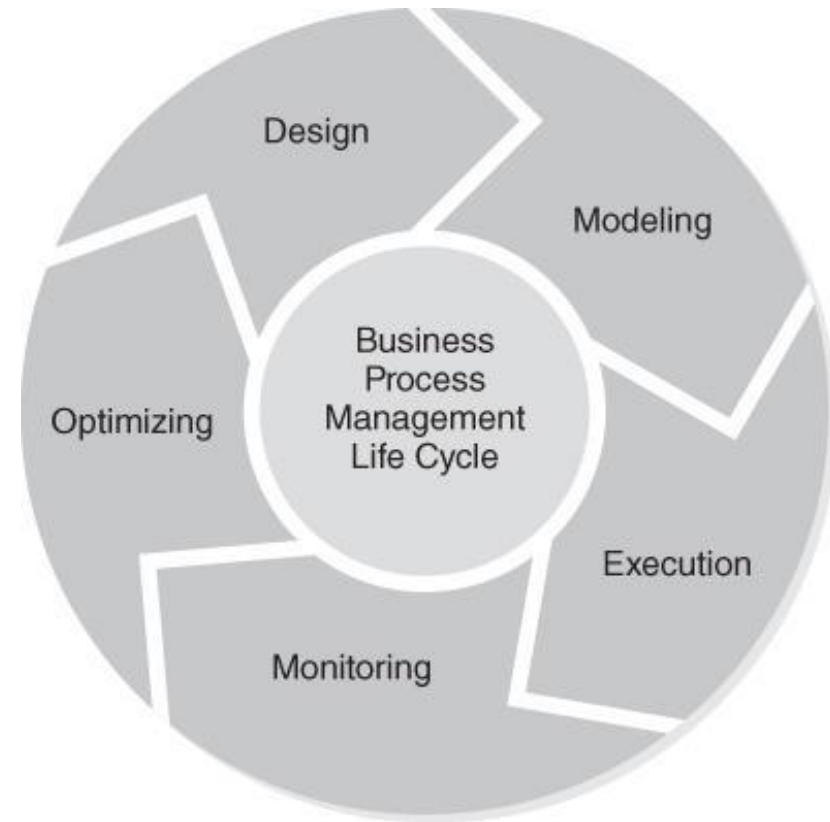


FIGURE 1-5 Businesses process management (BPM) life cycle.

Data from Liu, Dale and Luigi DeGrande., Introduction to Networking in Cisco CCNA/CCENT Exam 640-802, 640-822, 640-816 Preparation Kit, Syngress, 2009.

How Unified Communications Connect People and Businesses (2 of 2)

- Unified communications (UC)
 - Developing effective BPM process often attempts to bring all communication mediums together into a unified structure = UC
 - UC combines multiple technologies to provide effective real-time and non-real-time communications



Unified Communications

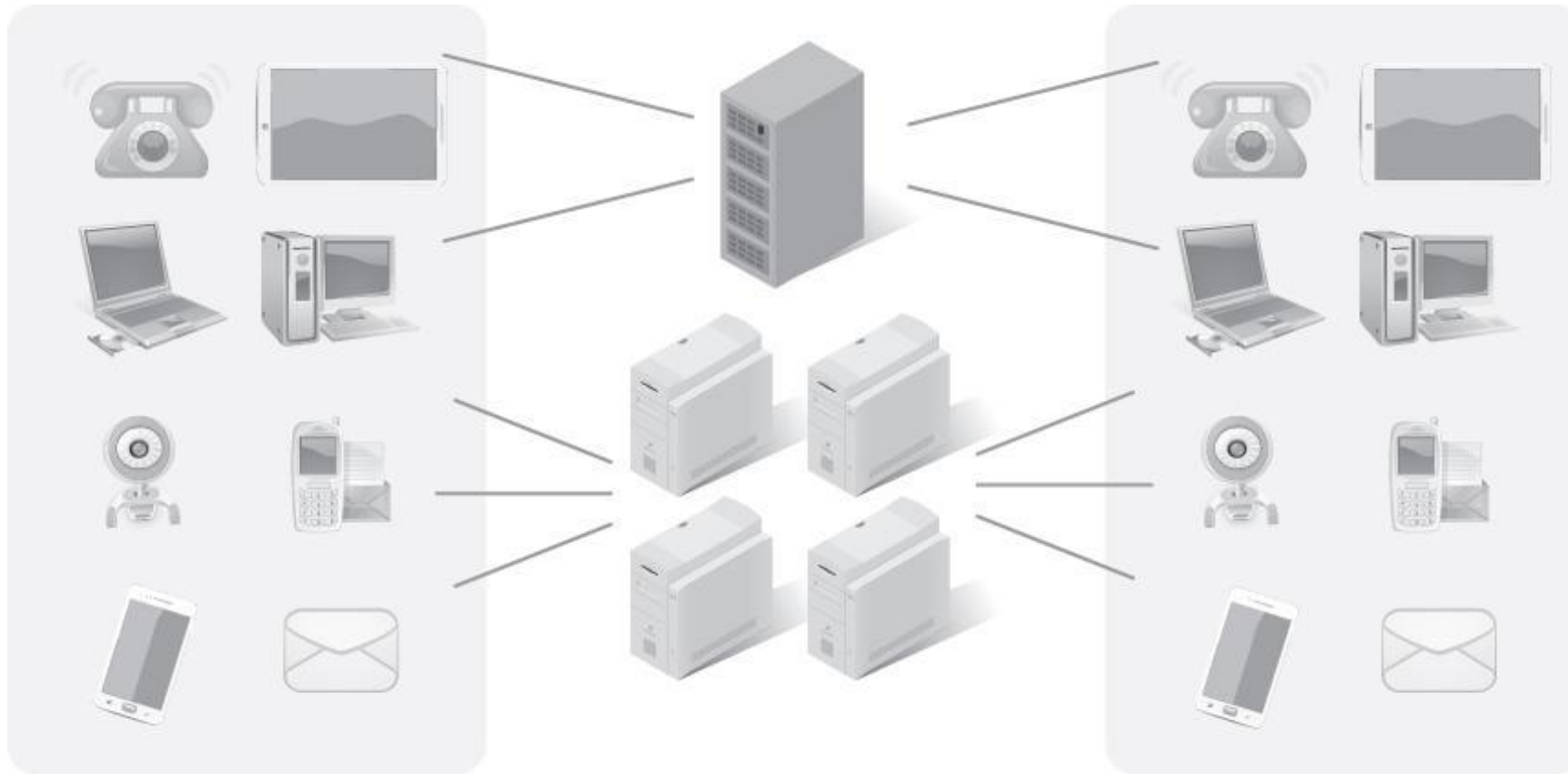


FIGURE 1-6 Unified communications.

Benefits of UC (1 of 2)

Better support of remote and mobile users

Increased ability to conduct teleconferences and video conferences

Higher worker productivity and retention

Reduced sales cycle timeline

Benefits of UC (2 of 2)

Shortened project timelines

Better identification of communication paths to resolve questions and issues

Increased customer satisfaction

How Communications Have Evolved

Snail Mail

- Written documents sent through a delivery service, such as USPS or FedEx

Store-and-Forward Messages

- Email

Real-Time Communication

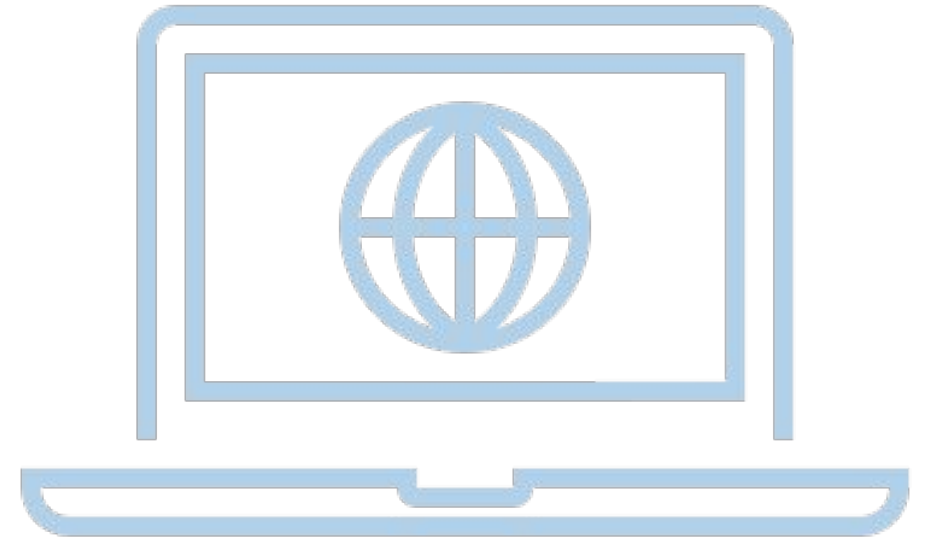
- Face-to-face meeting
- Telephone
- Instant messaging
- Text messaging

Social Media

- Social networking, such as Facebook, Instagram, and LinkedIn

The Web's Impact on Business

- Brick-and-mortar stores have global reach by extending business to the Internet
- E-commerce
 - The practice of doing business with remote customers over the Internet
 - Has changed how organizations carry out business transactions
- The web has changed how organizations market their goods



E-commerce Business Models

Model	Description	Features
Business to consumer (B2C)	Describes business activities that involve providing products or services directly to end consumers, such as retail sales.	<ul style="list-style-type: none">• Typically low volume• Fixed or limited pricing• Little integration with customers' systems
Business to business (B2B)	Describes activities that involve doing business with other businesses, such as within a supply chain. Common B2B interactions take place between manufacturers and wholesalers.	<ul style="list-style-type: none">• Much higher volume• Price negotiation is common• Integration with participants' systems is common
Business to government (B2G)	Describes activities that support business activities between commercial organizations and government agencies, also called public sector organizations (PSO).	<ul style="list-style-type: none">▪ Requests for proposal (RFPs)▪ Prenegotiated price▪ Strict constraints on allowed products, services, and activities

Solving E-commerce Business Challenges (1 of 2)

Challenges that organizations face

- How to expand business offerings using the web
- Converting an existing organization to enable e-commerce
- Ensuring data security and privacy for online customers and business partners
- Incorporating online technology into the organization's core business activities
- Keeping up with new technologies
- Using online resources and capabilities to reach new customers and develop ongoing relationships with them



Solving E-commerce Business Challenges (2 of 2)

Solving e-commerce business challenges

- Determine which model will be the primary model
 - Online entity only or traditional + e-commerce?
- Determine how you will interact with existing customers
- Determine how you will find new customers
- Determine how to provide the right services to convert prospects into repeat customers or long-term business partners
- Create a well-designed website to conduct e-commerce
- Engage with customers and prospects on social media, review and opinion apps, and company-specific apps

Transforming a Traditional Business Model Into an Online Model

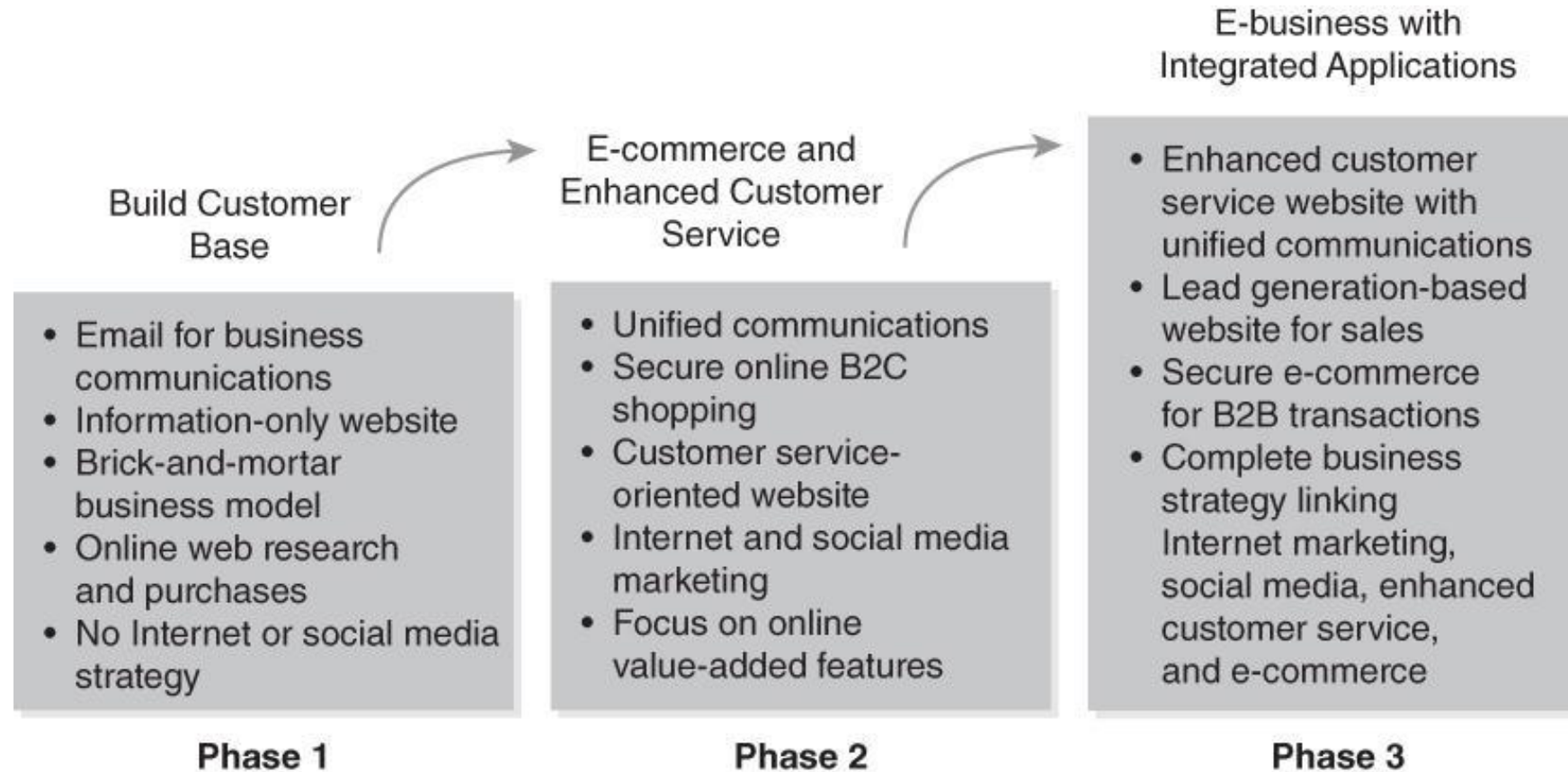


FIGURE 1-10 Transforming a traditional business model into an online model.

The Internet of Things' Impact on Business

You can track everything.

Data will grow even faster.

Administrative delays will shrink.

Waste will be easier to identify.

Identity and authorization management will become more complex.

Some jobs or roles may change or go away.

The Cloud's Impact on Business (1 of 2)

Cloud computing

- Renting someone else's computers and network to run software to support your business

Cloud service provider (CSP)

- Businesses that offer cloud computing services

Virtualization

- Virtual machines (VMs), dynamic provisioning, hypervisors, snapshot

The Cloud's Impact on Business (2 of 2)



Anything as a Service (XaaS)

- Extends SaaS solutions as professional services
- Examples: Security as a Service, Database as a Service, Blockchain as a Service, Privacy as a Service

Summary

- The hyperconnected world
- The Internet and IP connectivity
- Unified communications (UC)
- Snail mail, store-and-forward messaging, social media, and real-time messaging
- How the web, the Internet of Things (IoT), and cloud computing have transformed business