INDEX

Numerics

802.11, Wi-Fi, 58

A

access network, 47
backbone, 48–49
fiber-optic networks, 49
phone-line networking, 60
access speeds, 8
Mbps, 8–9
broadband network tasks, suggested data rates, 11–12
activities of teleworkers, 100
adoption time for new technologies, 5
ADSL (asymmetric DSL), video streaming, 30
advantages of teleworking, 101–102
environmental benefits, 103
productivity, 103
advocacy groups, TechNet, 68–69
Allenby, Braden, 101
always-on technologies, 12–14
connectivity, 90–93
security, 61–62
America Online (AOL), 19
analog technologies, 24
modems, 25
applications of broadband
business applications, 72–73
educational applications, 76
entertainment applications, 77–78
government applications, 74
healthcare applications, 75–76
architecture of cable systems, 36
ARPA (Advanced Research Projects Agency), 3
availability of broadband
as economic force, 70–71
as national priority, 69–70
tracking, 69

B

Babbio, Larry, 127
Bach, Robbie, 121
backbone, 48–49
data capacity in U.S., 70
fiber-optic networks, 49
bandwidth, 48
barriers to teleworking, 101
Bell, Alexander Graham, 22
Benhamou, Eric, 69
bits, 8
Bluetooth, 60
BPI (baseline privacy interface), 62
Brinks, Kevin, 79
broadband
advocacy groups, Technet, 68–69
and dot.com economy, 17, 20
as economic force, 70–71
building blocks, 22
corporate networks, 26–27
digital revolution, 23–24
modems, 25
business applications, 72–73
defining, 10
educational applications, 76
entertainment applications, 77–78
future applications of, 4

future services, 14
government applications, 74
healthcare applications, 75–76
origins of, 21–22
tracking availability of, 69
widespread availability as national imperative, 69
building blocks of broadband, 22
corporate networks, 26–27
digital revolution, 23–24
modems, 25
Bush administration's initiatives to foster competition, 130–133
business applications of broadband, 72–73

C

cable modems
history of, 34–41
IP addresses, 53
PIDs, 53
public-access channel, 39
two-way architecture, 40
cable network technologies
architecture, 36
nodes, 56
business model, 39
CMTS, 51–52
DOCSIS, 39–44, 51
product certification, 44–45
headend, 51
reverse path, 37
traffic allocation schemes, 50
CableLabs, 43
Carterfone, 25
central offices, 28
certification of DOCSIS products, 44–45
Chambers, John, 69
CLECs (Competitive Local Exchange Carriers), 31
CMTS (Cable Modem Termination System), 51–52
comparing online activities of broadband and dialup users, 81–82
competition among broadband providers, impact on prices, 130–133
condensed baseball games, 109
consumer cost of broadband per household, 71
content, 109–110
entertainment, 117
downloading files, 119
movies-on-demand, 117–119
providers, RealNetworks, 111
repurposed material, 110
streaming media, 112
ESPN Motion, 113
telephony, 122
VoIP, 122
user-generated, 114–115
video, 112, 115–116
video games, 120
corporate networks as building blocks of broadband, 26–27
cost of broadband per household, 71
Crandall, Robert, 128
crosstalk, 55

D

data rates, 8
of analog modems, 25
suggested rates for network broadband tasks, 11–12
defining broadband, always-on, 12–14
delivery schemes, PONs, 132

development
of broadband, 3
of cable technologies, 41
cable modems, 36
DOCSIS, 41–45
MCNS, 43
public-access channel, 39
reverse path, 37
of DSL, 29
devices
cable modems, 53
DSL modems, 54
DSLAMs, 55
DHCP (Dynamic Host Configuration Protocol) servers, 53
dialup customers, reluctance to convert to broadband, 71
digital revolution as building block of broadband, 23–24
distance-learning, 129
diversity of residential broadband users' online activities, 84
DOCSIS (Data Over Cable Service Interface Specification), 39–44, 51, 54
product certification, 44–45
dot.com economy versus broadband economic revolution, 17, 20
downloading
bandwidth, 48
movies, 119
DSL
ADSL, video streaming, 30
HDSL, 29
history of, 27–28
ISDN, 28–29
Telecommunications Act of 1996, 31–34
video streaming, 30
modems, 54
DSLAM (Digital Subscriber Line Access Multiplexer), 55
DSPs (digital signal processors), 24

E

E1 lines, 29
e-commerce, 116
economic issues, 70–71
dot.com economy versus broadband revolution, 17, 20
revenue generated by broadband, 18
education
broadband applications, 76
distance-learning, 129
effect of broadband on quality of life, 68
electromagnetic spectrum, 49
Elfer, Bill, 35
entertainment, 117
broadband applications, 77–78
file-sharing services, 119
movies-on-demand, 117
downloading files, 119
video games, 120
environmental benefits of teleworking, 103
impact of broadband, 106
ESPN Motion, 113
Ethernet, 50

F

Fellows, Dave, 41
fiber-optic networks, 49
fiber-to-the-home, 132
file-sharing services, 83–84
Napster, 119
MP-3, 120

firewalls, protecting always-on systems, 62
future applications of broadband, 4, 14

G

gaming online, video games, 120
Gilfillan, S.C., 4
Glaser, Rob, 111
Gore, Albert, 2
government applications of broadband, 74
government policies to develop broadband, 130–133

H

HDSL (high bit-rate digital subscriber line), 29
headend, 37, 51
healthcare applications of broadband, 75–76
HFC (hybrid fiber-coax) architecture, 54
higher education, distance-learning, 129
history
of cable modems, 34–41
DOCSIS, 39–44
of DSL, 27–28
ISDN, 28–29
Telecommunications Act of 1996, 31–34
video streaming, 30
Home Phone Networking Alliance, 60
home premises networks, 59, 87–88, 118
networked appliances, 88
in the kitchen, 88–90
HomePNA, 60
Horrigan, John, 82
Hybrid Network Technologies, 39

I

impact of broadband on economy, 128
inception of broadband, 21–22
information highway, 1
information snacking, 2, 85
In-Stat/MDR, projected broadband subscription rate, 6
international markets
China, 127
developing countries, 129–130
South Korea, 126
Internet, 3
access speeds, 8
Mbps, 8–9
backbone, 48–49
unused backbone data capacity, 70
Internet cafes in Arab countries, 67
IP (Internet Protocol), 48
cable modem IP addresses, 53
IrDA (Infrared Data Association), 60
ISDN (Integrated Services Digital Network), 28–29
ITAC (International Telework Association & Council), 97

J-K

Jackson, Charles L., 128

Ka-band satellites, 57
Kaldor, Sean, 85
Kennard, William, 16
kitchens, networked appliances, 88–90
Kunitake Ando, 6

L

last mile, 28, 47
wireless broadband, 57–58
versus home-based networks, 59
layers of OSI reference model, 58–59
legislation, Telecommunications Act of 1996, 31–34
Liikanen, Erkki, 19
local loop, 28

M

Mbps (megabit per second), 8–9
McKerlich, Ian, 109
MCNS (Multimedia Cable Network System), 43
medical applications of broadband, 75–76
Mehlman, Bruce, 98
Miller, Jon, 19, 85
MMDS (Multichannel Multipoint Distribution Services), 57
modems, 25
as building block of broadband, 25
cable modems, 53–54
DSL modems, 54
modulation, 51
QAM, 52
Movielink, anti-piracy protection, 119
movies-on-demand, 117
MP-3, music file-sharing, 120
multiplayer video games, 121
multiplexing, 55
music, MP-3 format, 120

N

Napster, 119
narrowband, 9
National Broadband Task Force, 16
suggested data rates for broadband network tasks, 11–12
networked appliances, 88
in the kitchen, 88–90
new technology adoption times, 5
nodes, 56

O

OECD (Organization for Economic Cooperation and Development), 5
online activities of broadband users, 81–82
diversity of, 84
file sharing, 83–84
information snacking, 85
web searches, 83
online content, 109–110
entertainment, 117
downloading files, 119
file-sharing services, 119
movies-on-demand, 117
RealNetworks, 111
repurposed material, 110
streaming media, 112
EPSN Motion, 113
telephony, 122
user-generated, 114–115
video, 115–116
video streaming, 112
video games, 120
online retail sales in South Korea, 127
origins of broadband, 21–22
OSI reference model, 58–59

P

Paige, Rodney, 129
PARC (Palo Alto Research Center), 26
Pew Internet & American Life Project, 13
phone-line networking, 60
PID (Packet Identifier), 53
piracy, 119
of music, 120
Pociask, Stephen, 128
PONs (passive optical networks), 132
popularity of teleworking, 101
POTS (plain old telephone service), 27
productivity of teleworkers, 103
protecting always-on systems, 61–62
providers of broadband, 63
public-access channel, 39
Putnam, Robert, 106

Q-R

QAM (Quadrature Amplitude Modulation), 52
QPSK (Quadrature Phase Shift Key), 51

Rainie, Lee, 82
RealNetworks, 111–112
reluctances of dialup users to convert to broadband, 71
remote employees. *See also* teleworking
activities of teleworkers, 100
advantages of teleworking, 101–102
environmental benefits, 103
productivity, 103
research studies, Media Research Internet and Multimedia Study, 111
residential broadband users, 79–80
comparing online activities with dialup users, 81–82
content creation, 82
online activities
diversity of, 84
file sharing, 83–84
web searches, 83
teleworking, 99
residential Wi-Fi, 58
revenue generated by broadband business, 18
reverse path, 37

S

SAGE (Semi-Automatic Ground Environment) project, 26
security, protecting always-on systems, 61–62
Semon, Doug, 39
sessions, 96
Shapiro, Larry, 110, 132
shared architectures, nodes, 56
simplicity of digital information exchanges, 105
Skipper, John, 113
Smith, Ray, 30
South Korea
broadband subscribers, 9
investment in broadband, 126
online retail sales, 127
Stars Wars 1.1, 114
Starz Encore Group, movies-on-demand, 117
statistics regarding broadband, 65
streaming media, 112
ESPN Motion, 113

subscribers
AOL customers, 19
by country (table), 6–8
in developing nations, 66
in South Korea, 9
RealNetworks subscriptions, 112
worldwide statistics, 65
suggested data rates for broadband network tasks, 11–12

T

T1 lines, 29
tables, broadband subscribers by country, 6–8
TCP/IP (Transmission Control Protocol/Internet Protocol), 26
TechNet advocacy groups, 68–69
Telecommunications Act of 1996, 31–34
telephony
networks, 28
VoIP, 122
Tele-TV, 30
television, viewing habits of broadband users, 80
teleworking, 97
activities of teleworkers, 100
advantages of, 101–102
environmental benefits, 103
productivity, 103
barriers to overcome, 101
defining, 97
feasibility of, 99
in Finland, 97
in Japan, 97
ITAC, 97
popularity of, 101
residential broadband users, 99
Tian, Edward, 127
top providers of broadband, 63
tracking availability of broadband, 69
two-way cable architecture, 40

U

U.S. 1996 Telecommunications Act, 131
unused backbone data capacity, 70
user-generated content, 114–116

V

video
impact on e-commerce, 116
impact on DSL development, 30
RealNetworks subscription services, 112
user-generated content, 115–116
video games, 120
VoIP, 122
Vonage, 122

W–Z

Wadsworth, Steve, 121
Whitman, Meg, 116
widespread availability of broadband as national imperative, 69
Wi-Fi, 57, 61
wireless networks
Bluetooth, 60
broadband, 57–58
IrDA, 60