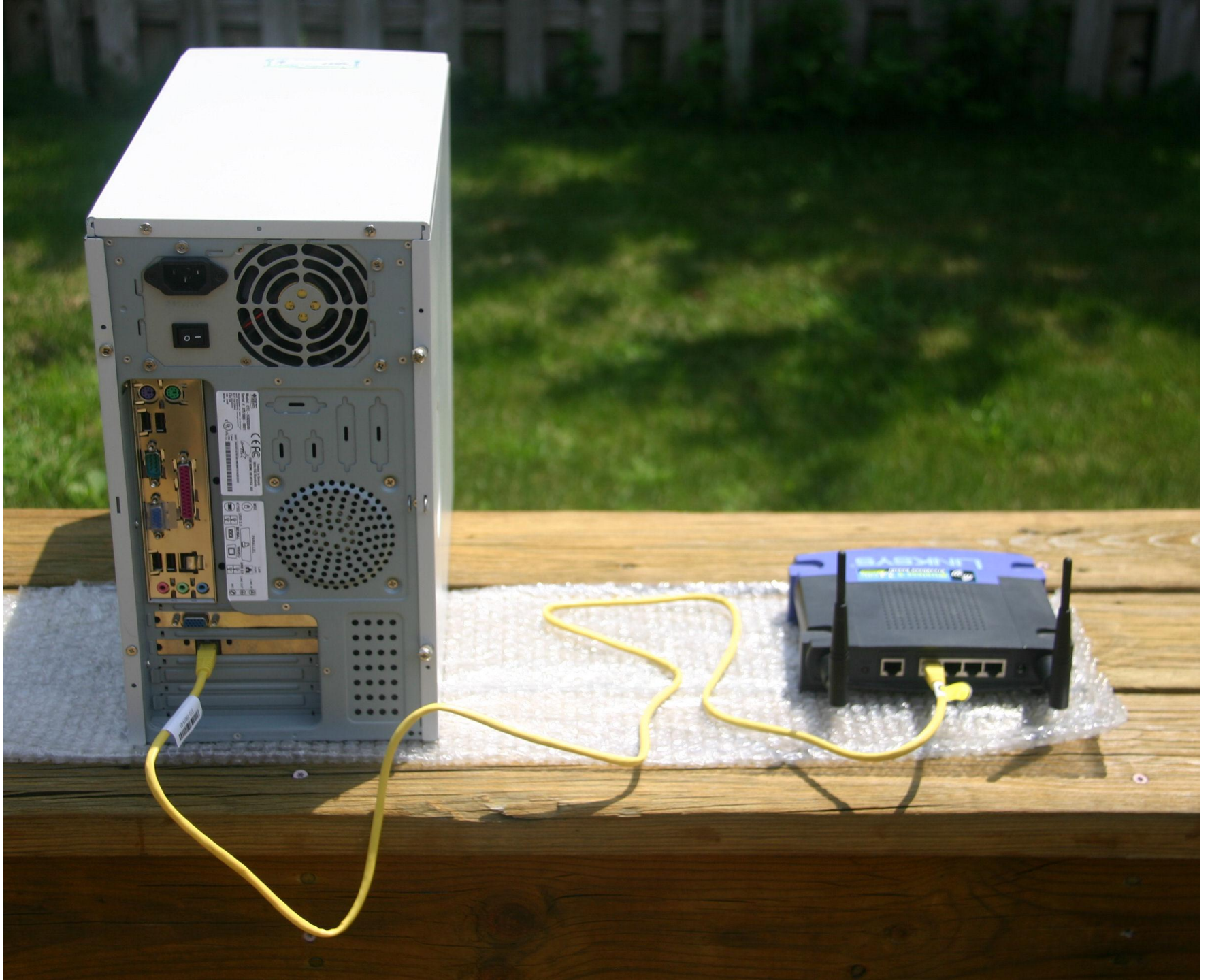
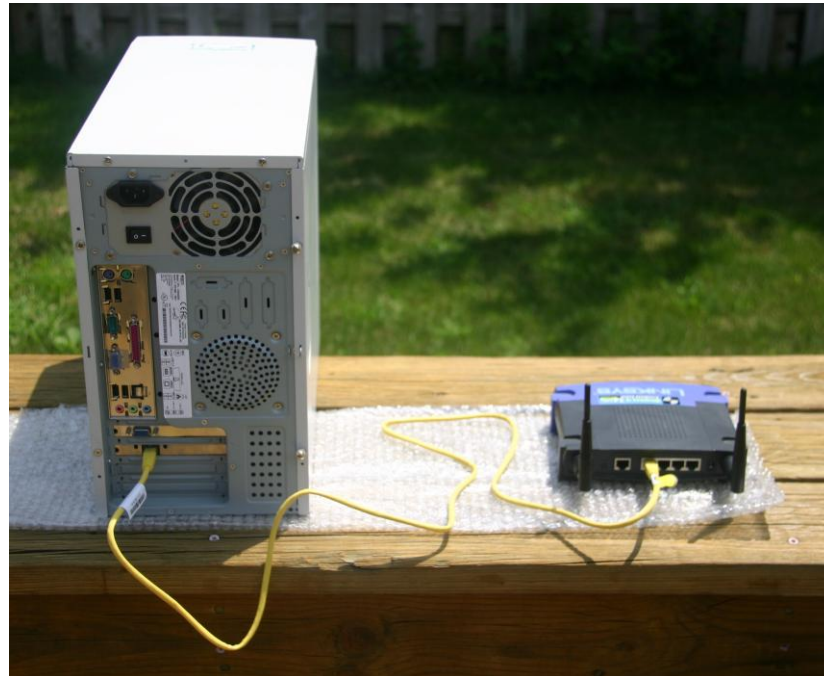
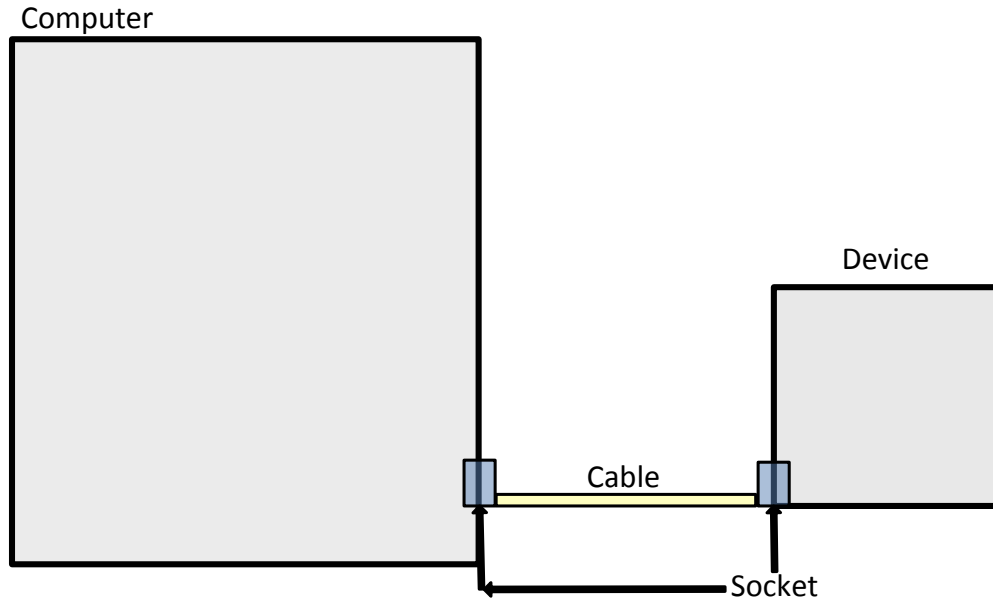


Peripherals

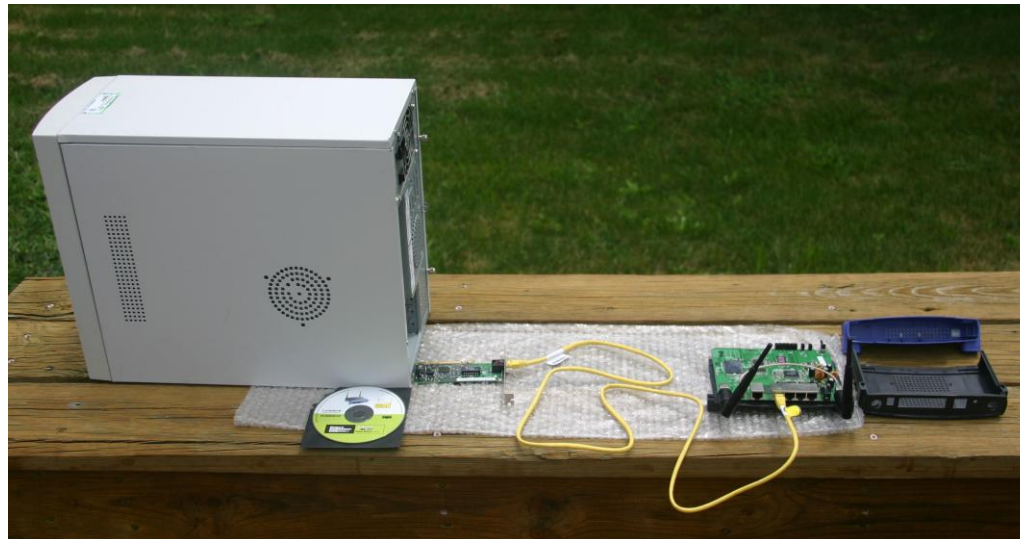
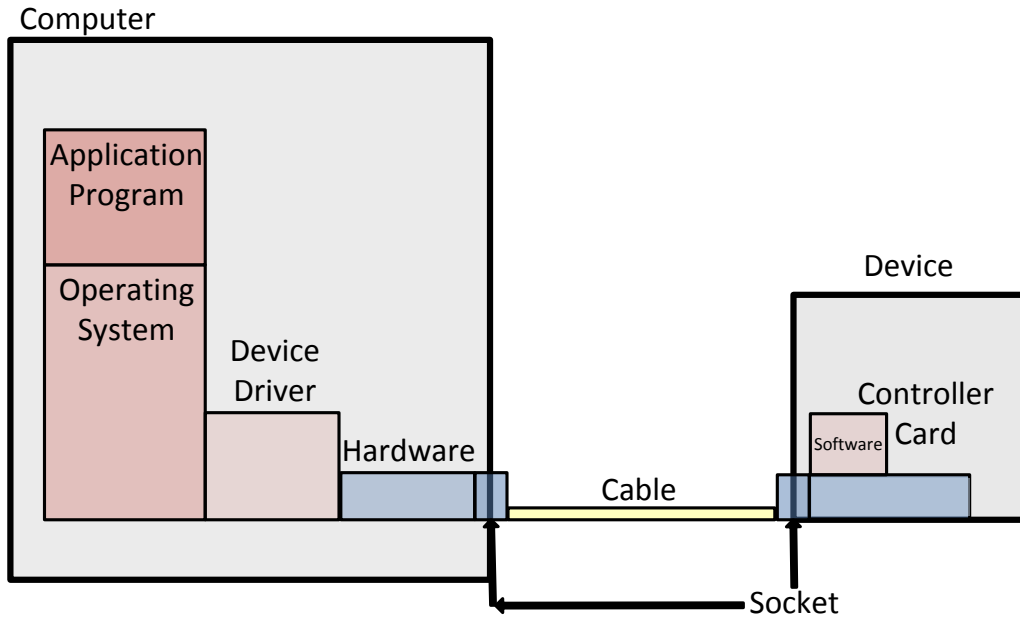


Peripheral Connection

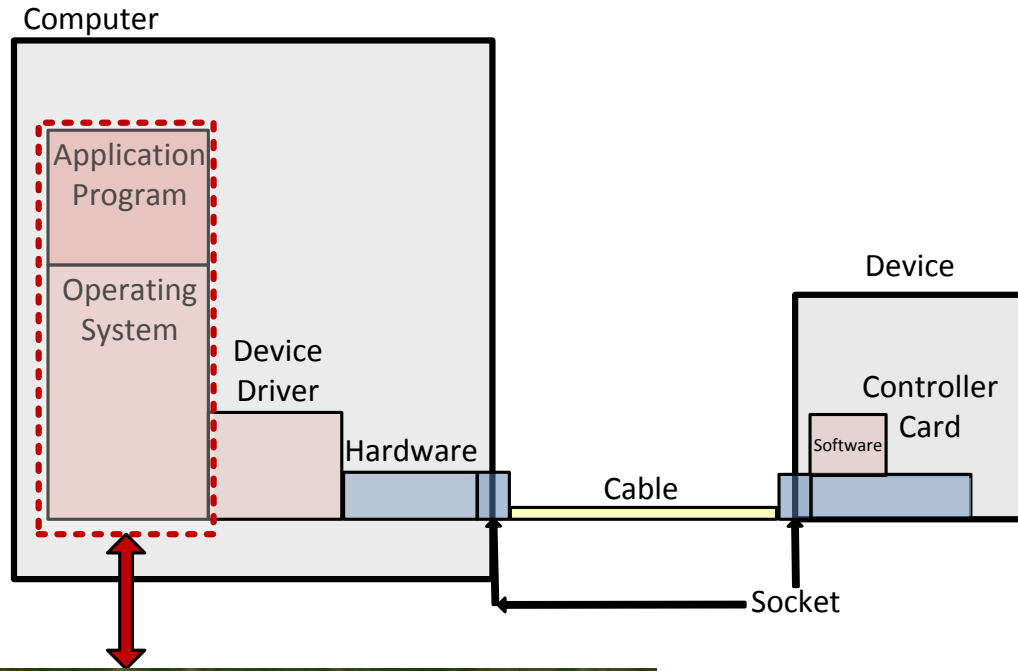




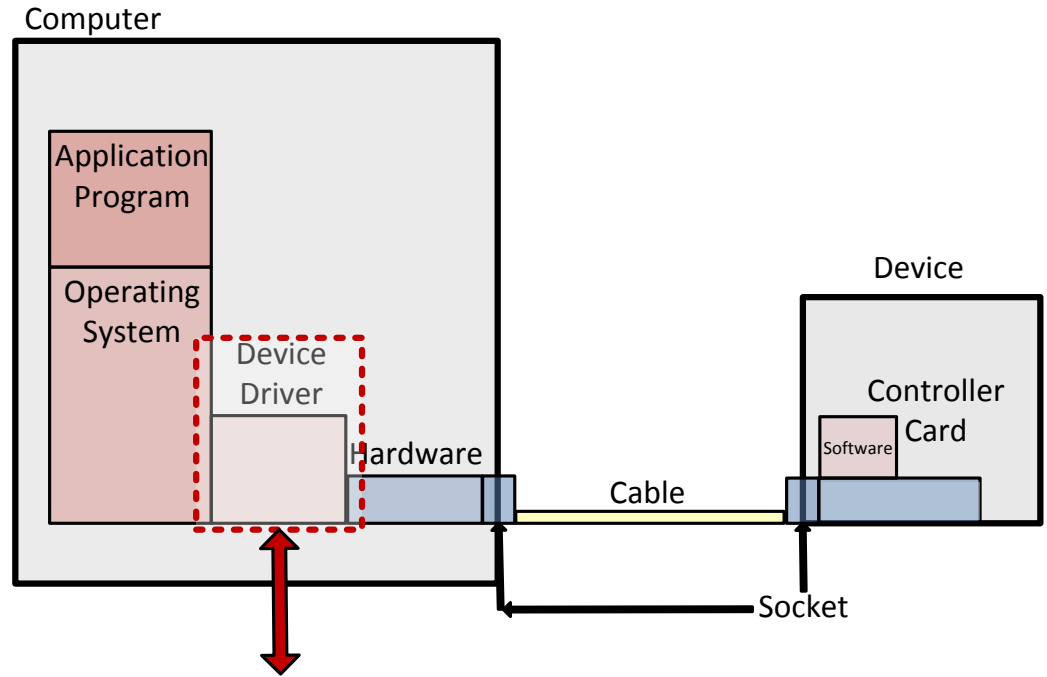
Peripheral Connection



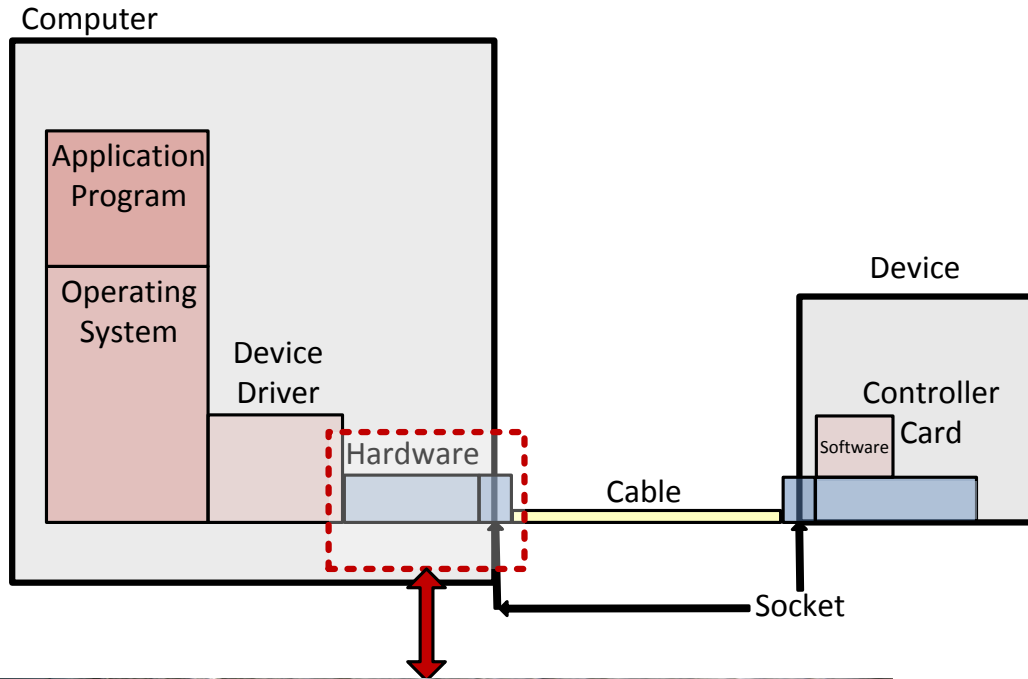
Peripheral Connection



Peripheral Connection



Peripheral Connection





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90-4C-NH
0120040-D

Pulse
H1012
0131 PHILIPPINES

FCC ID: E3MNPDALBANY
N 232
E139761

BSI

CE

U2 U1 U3 U4 U5 U6 U7 U8 U9 U10 U11 U12 U13 U14 U15 U16 U17 U18 U19 U20 U21 U22 U23 U24 U25 U26 U27 U28 U29 U30 U31 U32 U33 U34 U35 U36 U37 U38 U39 U40 U41 U42 U43 U44 U45 U46 U47 U48 U49 U50 U51 U52 U53 U54 U55 U56 U57 U58 U59 U60 U61 U62 U63 U64 U65 U66 U67 U68 U69 U70 U71 U72 U73 U74 U75 U76 U77 U78 U79 U80 U81 U82 U83 U84 U85 U86 U87 U88 U89 U90 U91 U92 U93 U94 U95 U96 U97 U98 U99 U100

R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32 R33 R34 R35 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R63 R64 R65 R66 R67 R68 R69 R70 R71 R72 R73 R74 R75 R76 R77 R78 R79 R80 R81 R82 R83 R84 R85 R86 R87 R88 R89 R90 R91 R92 R93 R94 R95 R96 R97 R98 R99 R100

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 C59 C60 C61 C62 C63 C64 C65 C66 C67 C68 C69 C70 C71 C72 C73 C74 C75 C76 C77 C78 C79 C80 C81 C82 C83 C84 C85 C86 C87 C88 C89 C90 C91 C92 C93 C94 C95 C96 C97 C98 C99 C100

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44 D45 D46 D47 D48 D49 D50 D51 D52 D53 D54 D55 D56 D57 D58 D59 D60 D61 D62 D63 D64 D65 D66 D67 D68 D69 D70 D71 D72 D73 D74 D75 D76 D77 D78 D79 D80 D81 D82 D83 D84 D85 D86 D87 D88 D89 D90 D91 D92 D93 D94 D95 D96 D97 D98 D99 D100

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34 Q35 Q36 Q37 Q38 Q39 Q40 Q41 Q42 Q43 Q44 Q45 Q46 Q47 Q48 Q49 Q50 Q51 Q52 Q53 Q54 Q55 Q56 Q57 Q58 Q59 Q60 Q61 Q62 Q63 Q64 Q65 Q66 Q67 Q68 Q69 Q70 Q71 Q72 Q73 Q74 Q75 Q76 Q77 Q78 Q79 Q80 Q81 Q82 Q83 Q84 Q85 Q86 Q87 Q88 Q89 Q90 Q91 Q92 Q93 Q94 Q95 Q96 Q97 Q98 Q99 Q100

Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 Y10 Y11 Y12 Y13 Y14 Y15 Y16 Y17 Y18 Y19 Y20 Y21 Y22 Y23 Y24 Y25 Y26 Y27 Y28 Y29 Y30 Y31 Y32 Y33 Y34 Y35 Y36 Y37 Y38 Y39 Y40 Y41 Y42 Y43 Y44 Y45 Y46 Y47 Y48 Y49 Y50 Y51 Y52 Y53 Y54 Y55 Y56 Y57 Y58 Y59 Y60 Y61 Y62 Y63 Y64 Y65 Y66 Y67 Y68 Y69 Y70 Y71 Y72 Y73 Y74 Y75 Y76 Y77 Y78 Y79 Y80 Y81 Y82 Y83 Y84 Y85 Y86 Y87 Y88 Y89 Y90 Y91 Y92 Y93 Y94 Y95 Y96 Y97 Y98 Y99 Y100

X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16 X17 X18 X19 X20 X21 X22 X23 X24 X25 X26 X27 X28 X29 X30 X31 X32 X33 X34 X35 X36 X37 X38 X39 X40 X41 X42 X43 X44 X45 X46 X47 X48 X49 X50 X51 X52 X53 X54 X55 X56 X57 X58 X59 X60 X61 X62 X63 X64 X65 X66 X67 X68 X69 X70 X71 X72 X73 X74 X75 X76 X77 X78 X79 X80 X81 X82 X83 X84 X85 X86 X87 X88 X89 X90 X91 X92 X93 X94 X95 X96 X97 X98 X99 X100

W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13 W14 W15 W16 W17 W18 W19 W20 W21 W22 W23 W24 W25 W26 W27 W28 W29 W30 W31 W32 W33 W34 W35 W36 W37 W38 W39 W40 W41 W42 W43 W44 W45 W46 W47 W48 W49 W50 W51 W52 W53 W54 W55 W56 W57 W58 W59 W60 W61 W62 W63 W64 W65 W66 W67 W68 W69 W70 W71 W72 W73 W74 W75 W76 W77 W78 W79 W80 W81 W82 W83 W84 W85 W86 W87 W88 W89 W90 W91 W92 W93 W94 W95 W96 W97 W98 W99 W100

V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 V21 V22 V23 V24 V25 V26 V27 V28 V29 V30 V31 V32 V33 V34 V35 V36 V37 V38 V39 V40 V41 V42 V43 V44 V45 V46 V47 V48 V49 V50 V51 V52 V53 V54 V55 V56 V57 V58 V59 V60 V61 V62 V63 V64 V65 V66 V67 V68 V69 V70 V71 V72 V73 V74 V75 V76 V77 V78 V79 V80 V81 V82 V83 V84 V85 V86 V87 V88 V89 V90 V91 V92 V93 V94 V95 V96 V97 V98 V99 V100

U1 U2 U3 U4 U5 U6 U7 U8 U9 U10 U11 U12 U13 U14 U15 U16 U17 U18 U19 U20 U21 U22 U23 U24 U25 U26 U27 U28 U29 U30 U31 U32 U33 U34 U35 U36 U37 U38 U39 U40 U41 U42 U43 U44 U45 U46 U47 U48 U49 U50 U51 U52 U53 U54 U55 U56 U57 U58 U59 U60 U61 U62 U63 U64 U65 U66 U67 U68 U69 U70 U71 U72 U73 U74 U75 U76 U77 U78 U79 U80 U81 U82 U83 U84 U85 U86 U87 U88 U89 U90 U91 U92 U93 U94 U95 U96 U97 U98 U99 U100

R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R31 R32 R33 R34 R35 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R63 R64 R65 R66 R67 R68 R69 R70 R71 R72 R73 R74 R75 R76 R77 R78 R79 R80 R81 R82 R83 R84 R85 R86 R87 R88 R89 R90 R91 R92 R93 R94 R95 R96 R97 R98 R99 R100

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58 C59 C60 C61 C62 C63 C64 C65 C66 C67 C68 C69 C70 C71 C72 C73 C74 C75 C76 C77 C78 C79 C80 C81 C82 C83 C84 C85 C86 C87 C88 C89 C90 C91 C92 C93 C94 C95 C96 C97 C98 C99 C100

D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44 D45 D46 D47 D48 D49 D50 D51 D52 D53 D54 D55 D56 D57 D58 D59 D60 D61 D62 D63 D64 D65 D66 D67 D68 D69 D70 D71 D72 D73 D74 D75 D76 D77 D78 D79 D80 D81 D82 D83 D84 D85 D86 D87 D88 D89 D90 D91 D92 D93 D94 D95 D96 D97 D98 D99 D100

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34 Q35 Q36 Q37 Q38 Q39 Q40 Q41 Q42 Q43 Q44 Q45 Q46 Q47 Q48 Q49 Q50 Q51 Q52 Q53 Q54 Q55 Q56 Q57 Q58 Q59 Q60 Q61 Q62 Q63 Q64 Q65 Q66 Q67 Q68 Q69 Q70 Q71 Q72 Q73 Q74 Q75 Q76 Q77 Q78 Q79 Q80 Q81 Q82 Q83 Q84 Q85 Q86 Q87 Q88 Q89 Q90 Q91 Q92 Q93 Q94 Q95 Q96 Q97 Q98 Q99 Q100

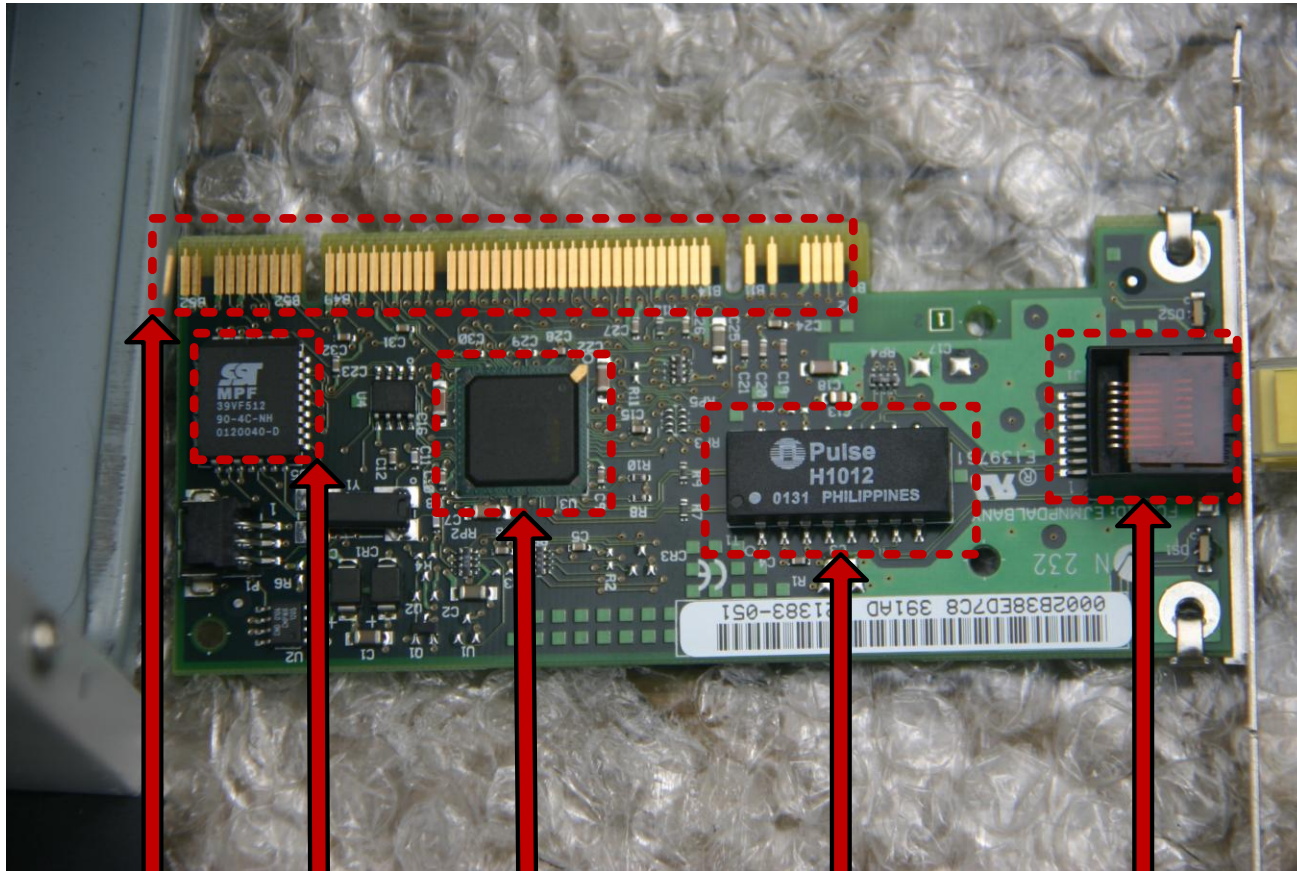
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X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16 X17 X18 X19 X20 X21 X22 X23 X24 X25 X26 X27 X28 X29 X30 X31 X32 X33 X34 X35 X36 X37 X38 X39 X40 X41 X42 X43 X44 X45 X46 X47 X48 X49 X50 X51 X52 X53 X54 X55 X56 X57 X58 X59 X60 X61 X62 X63 X64 X65 X66 X67 X68 X69 X70 X71 X72 X73 X74 X75 X76 X77 X78 X79 X80 X81 X82 X83 X84 X85 X86 X87 X88 X89 X90 X91 X92 X93 X94 X95 X96 X97 X98 X99 X100

W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13 W14 W15 W16 W17 W18 W19 W20 W21 W22 W23 W24 W25 W26 W27 W28 W29 W30 W31 W32 W33 W34 W35 W36 W37 W38 W39 W40 W41 W42 W43 W44 W45 W46 W47 W48 W49 W50 W51 W52 W53 W54 W55 W56 W57 W58 W59 W60 W61 W62 W63 W64 W65 W66 W67 W68 W69 W70 W71 W72 W73 W74 W75 W76 W77 W78 W79 W80 W81 W82 W83 W84 W85 W86 W87 W88 W89 W90 W91 W92 W93 W94 W95 W96 W97 W98 W99 W100

V1 V2 V3 V4 V5 V6 V7 V8 V9 V10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 V21 V22 V23 V24 V25 V26 V27 V28 V29 V30 V31 V32 V33 V34 V35 V36 V37 V38 V39 V40 V41 V42 V43 V44 V45 V46 V47 V48 V49 V50 V51 V52 V53 V54 V55 V56 V57 V58 V59 V60 V61 V62 V63 V64 V65 V66 V67 V68 V69 V70 V71 V72 V73 V74 V75 V76 V77 V78 V79 V80 V81 V82 V83 V84 V85 V86 V87 V88 V89 V90 V91 V92 V93 V94 V95 V96 V97 V98 V99 V100

Peripheral Interface Card



Bus
connection
to South
Bridge
Chip

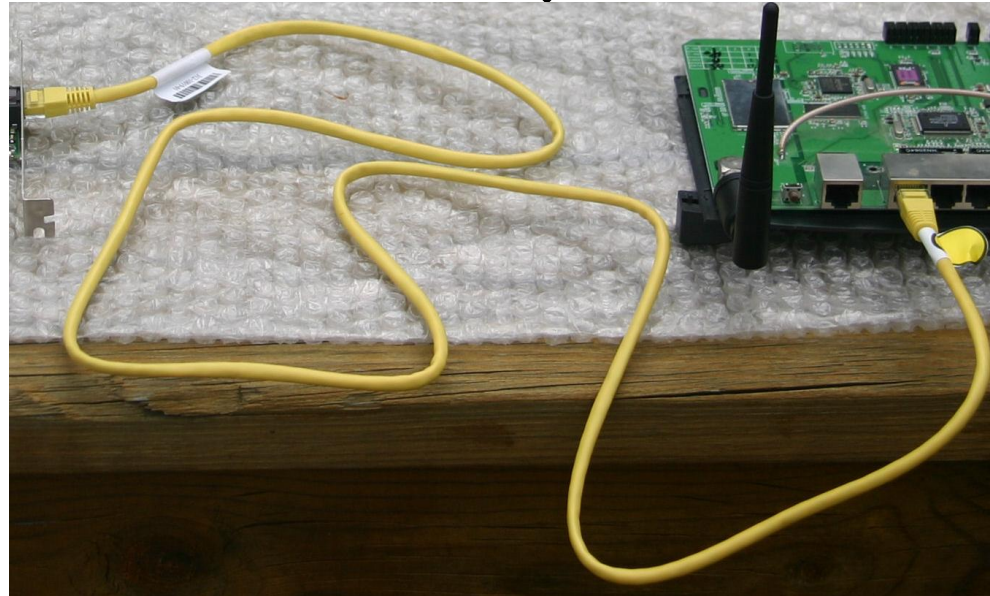
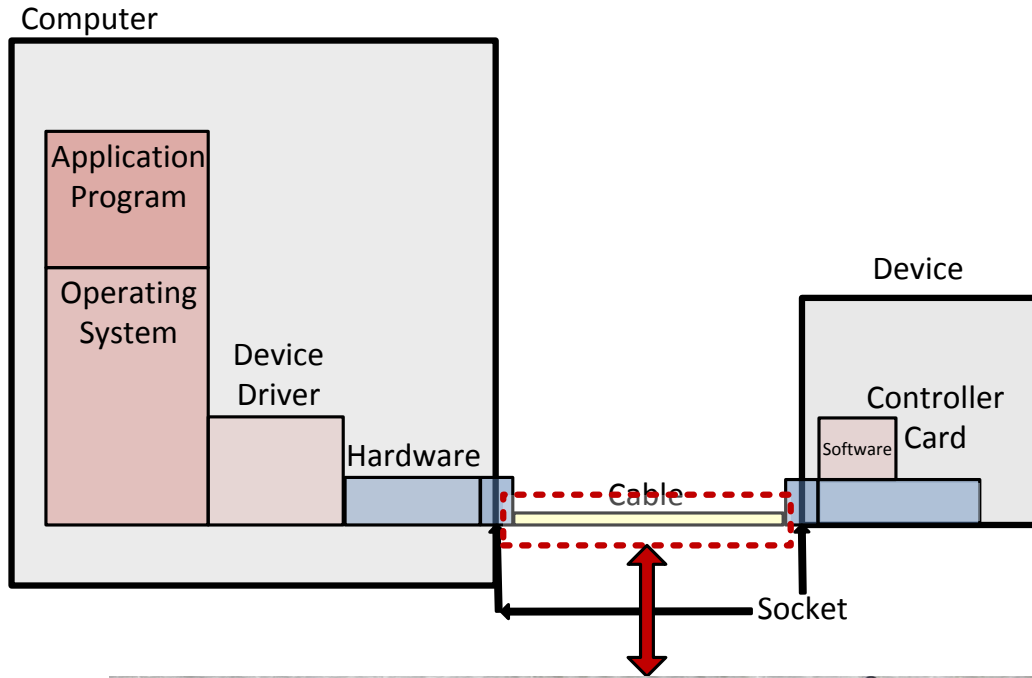
Firmware
Program

Application
Specific
Integrated
Circuit (ASIC)
Essentially a
specialized CPU

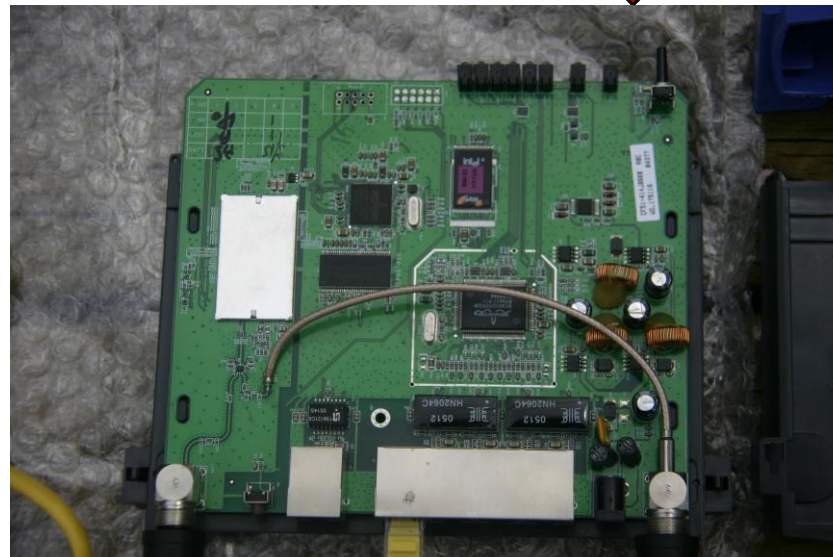
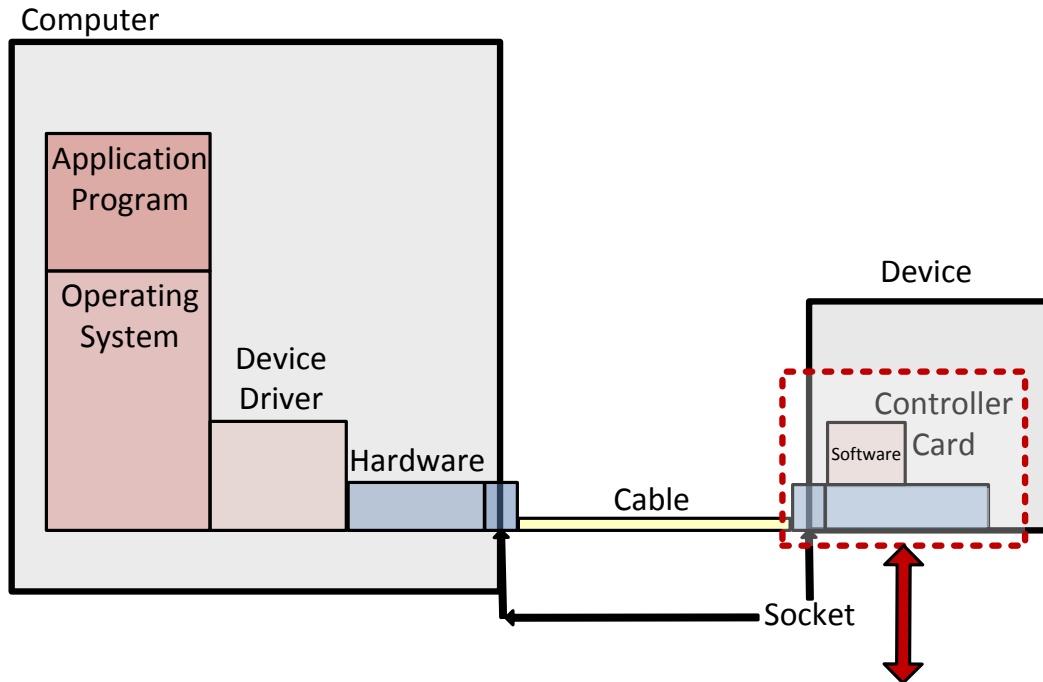
Analog Output
Electronics

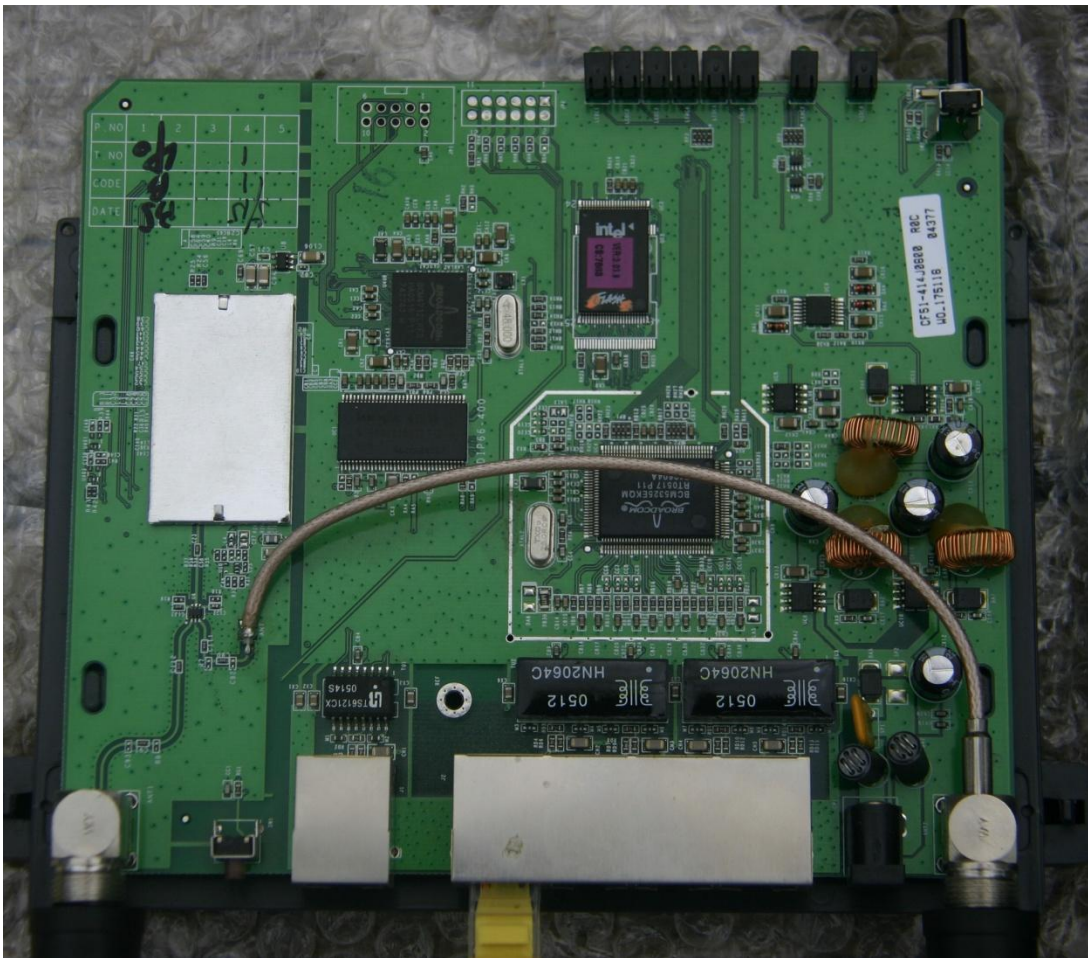
Connector

Peripheral Connection

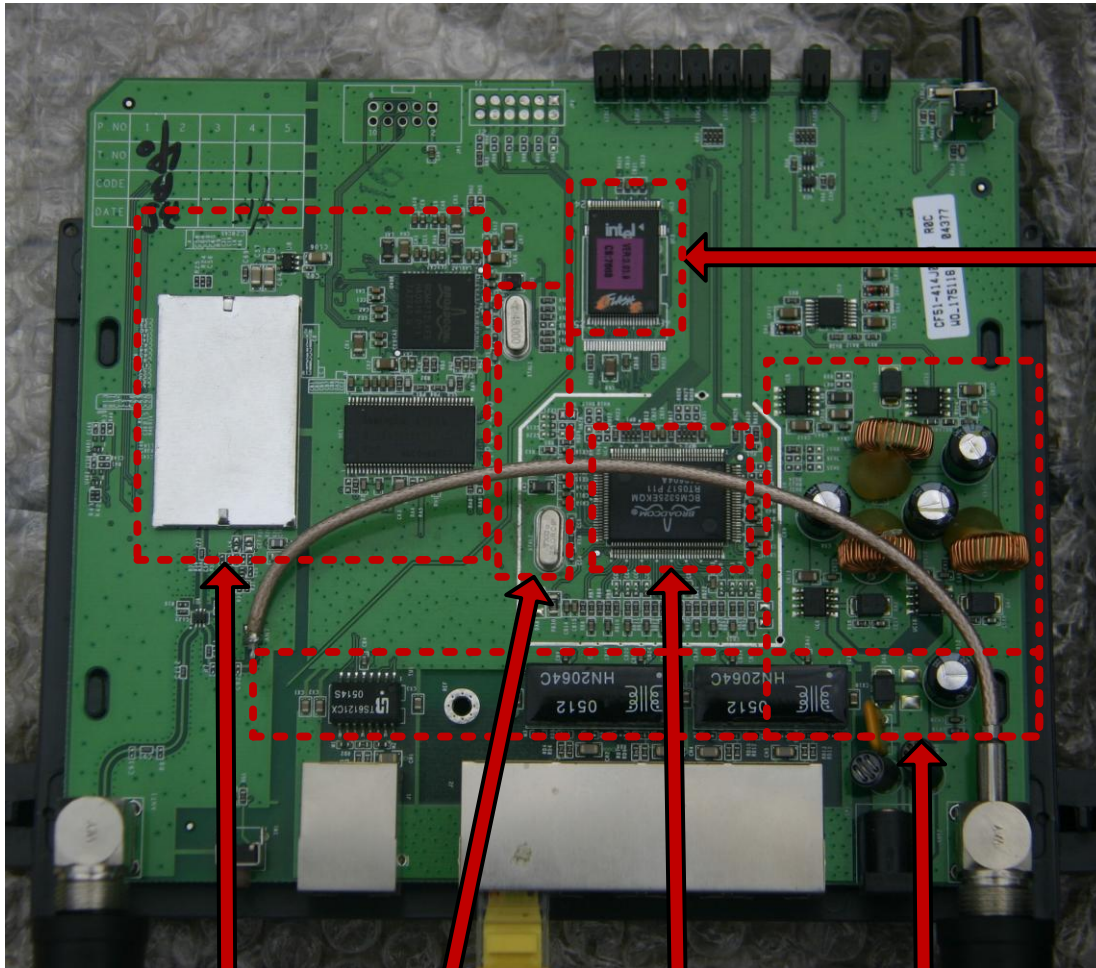


Peripheral Connection





Peripheral Controller



Radio
Frequency
Output
Electronics
(wireless)

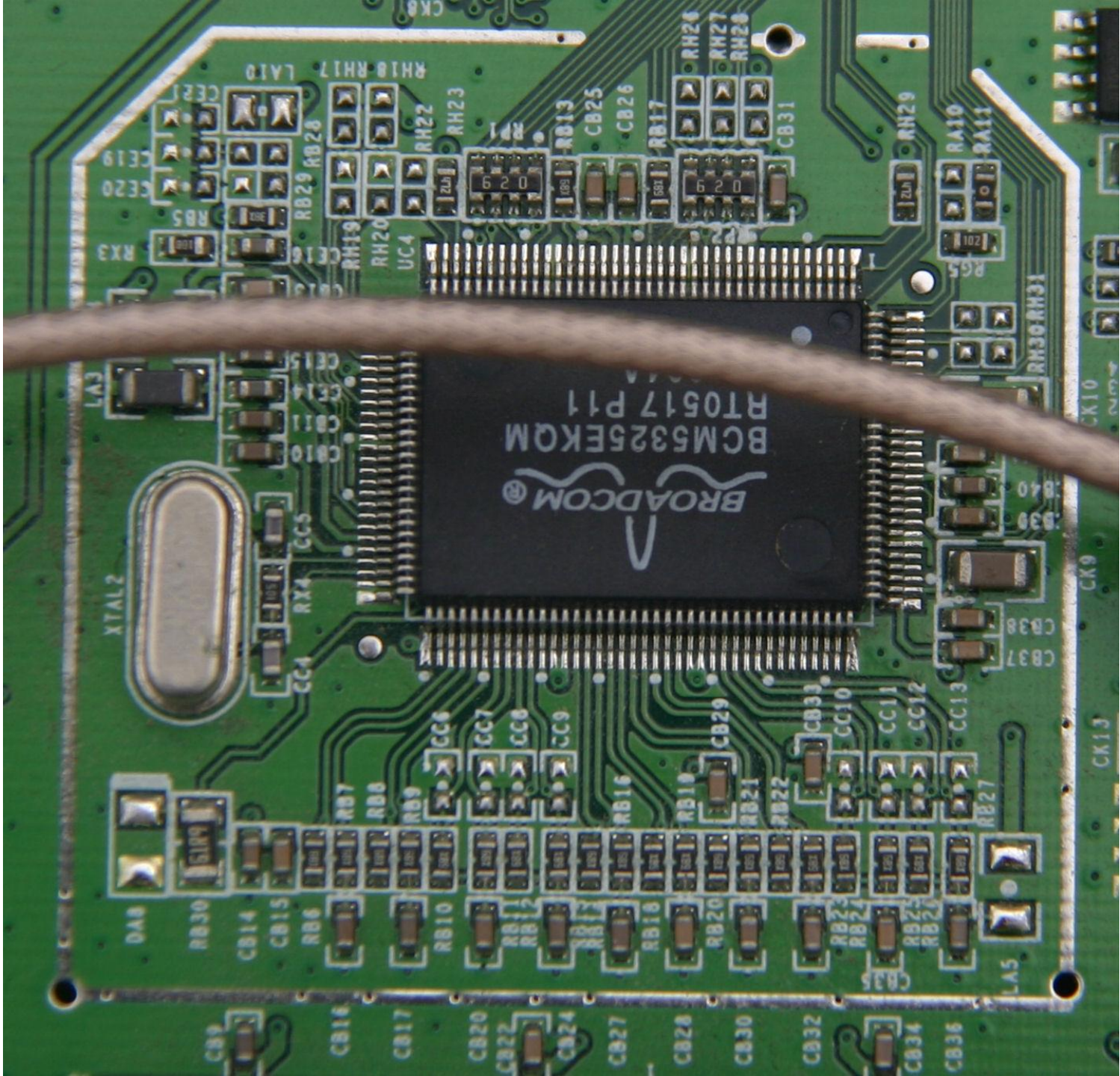
Clock
Crystals

Application
Specific
Integrated Circuit
(ASIC)

Essentially a
specialized CPU

Analog
Output
Electronics
(wired)

Flash Memory



BROADCOM
BCM5325EKOM
RT0517 P11

XTAL2

DA8

RB30

CB14

CB15

RB6

RB7

RB8

RB9

CC4

CC5

CC6

CC7

CC8

CC9

RB16

RB17

RB18

RB19

RB20

RB21

RB22

CB29

CB30

LA3

CB19

CB20

CB21

CB22

CB23

CB24

CB25

CB26

CB27

CB28

CB29

CB30

CB31

CB32

CB33

CB34

CB35

CB36

CB37

CB38

CB39

CB40

CE19

CE20

CE21

RB29

RB26

RH19

RH20

RH21

RH22

RH23

RB13

CB25

CB26

RB17

RH26

RH27

RH28

CB31

RH29

RA10

RA11

RG5

RH30

RH31

RX3

CB16

CB17

UC4

UC5

CB18

CB19

CB20

CB21

CB22

CB23

CB24

CB25

CB26

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CB35

CB36

LA5

CB37

CB38

CB39

CB40

CK9

CK10

CK11

CK12

CK13

CK14

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CK16

CK17

CK18

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CB235

CB236

CB237

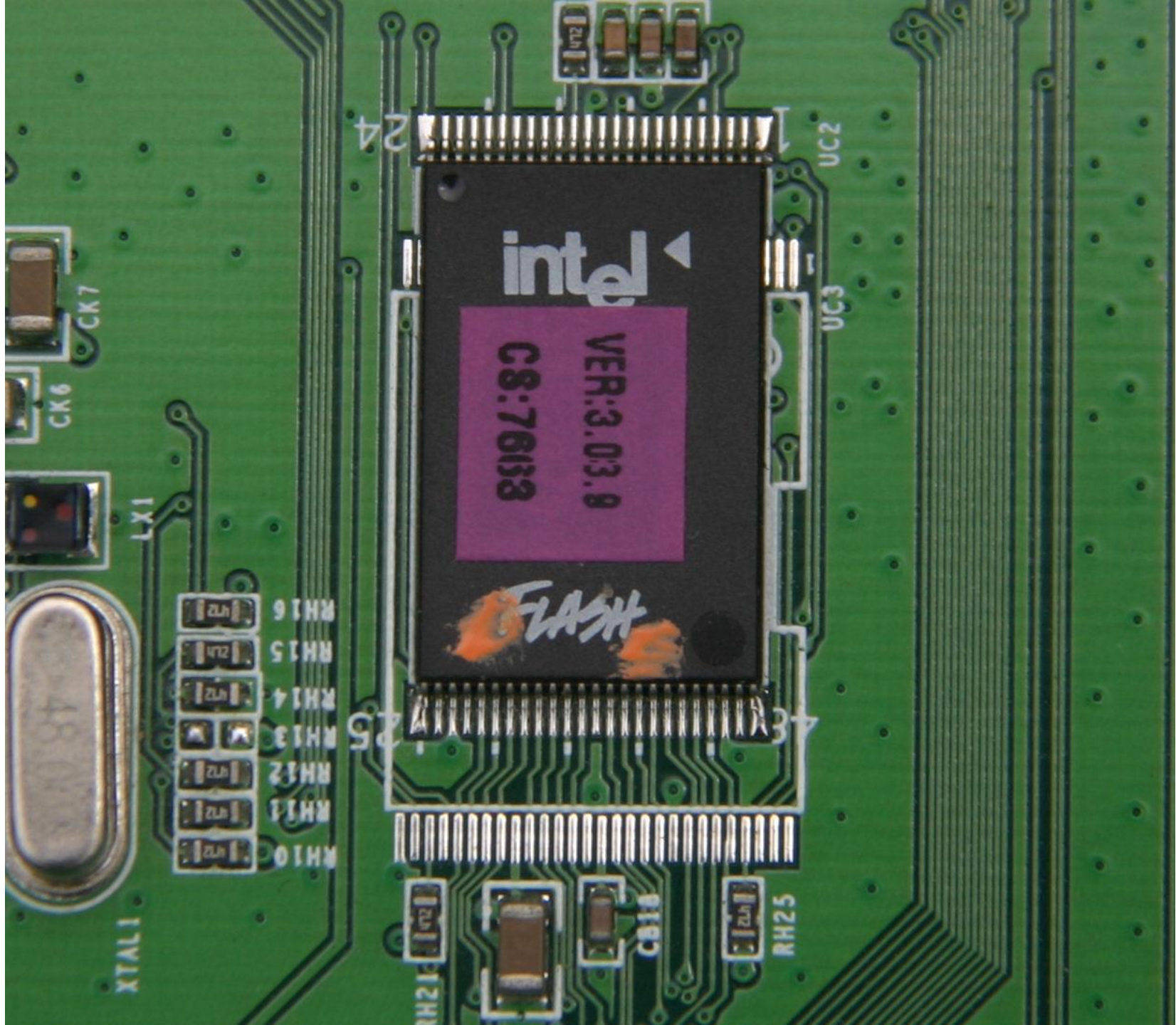
CB238

CB239

CB240

CB241

CB242



inteli
VER:3.03.8
CS:76138

FLASH

24

UC2

UC3

25

UC1

CK7

CK6

LX1

RH16

RH15

RH14

RH13

RH12

RH11

RH10

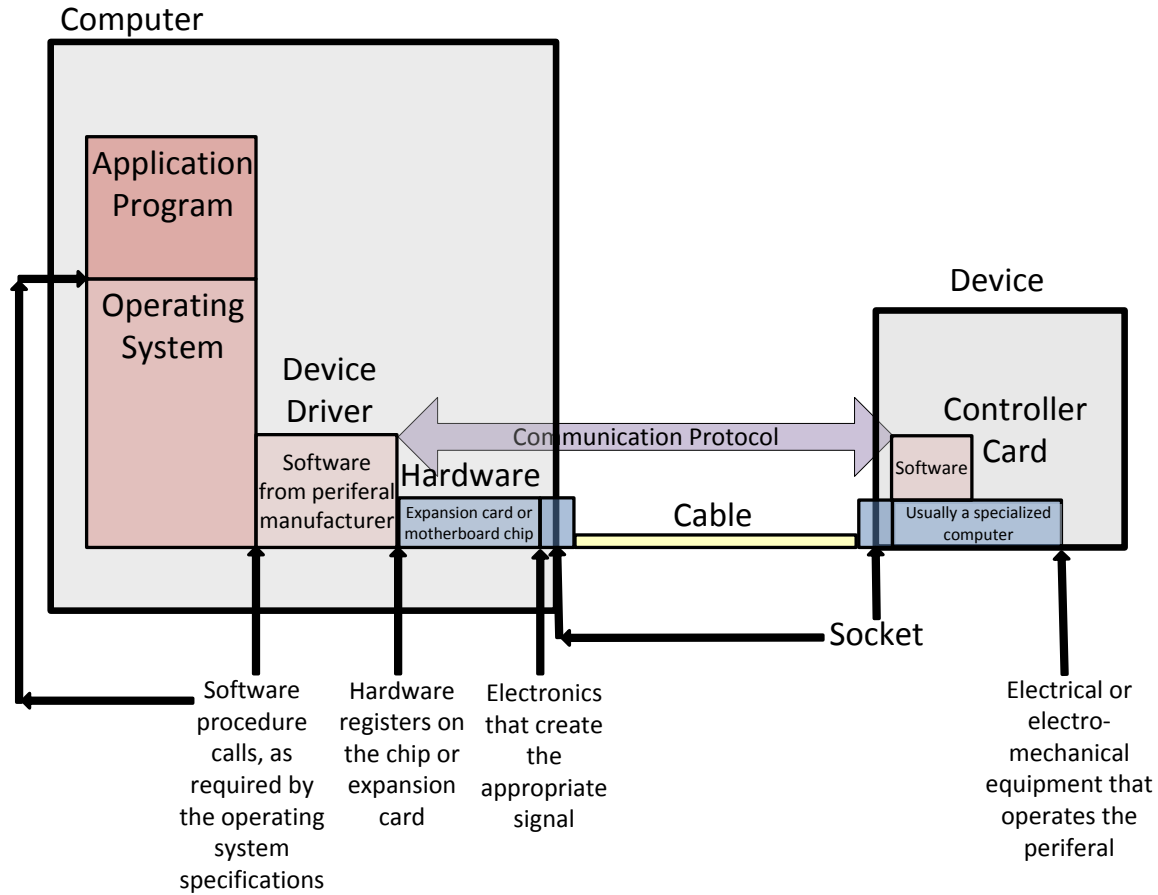
XTAL1

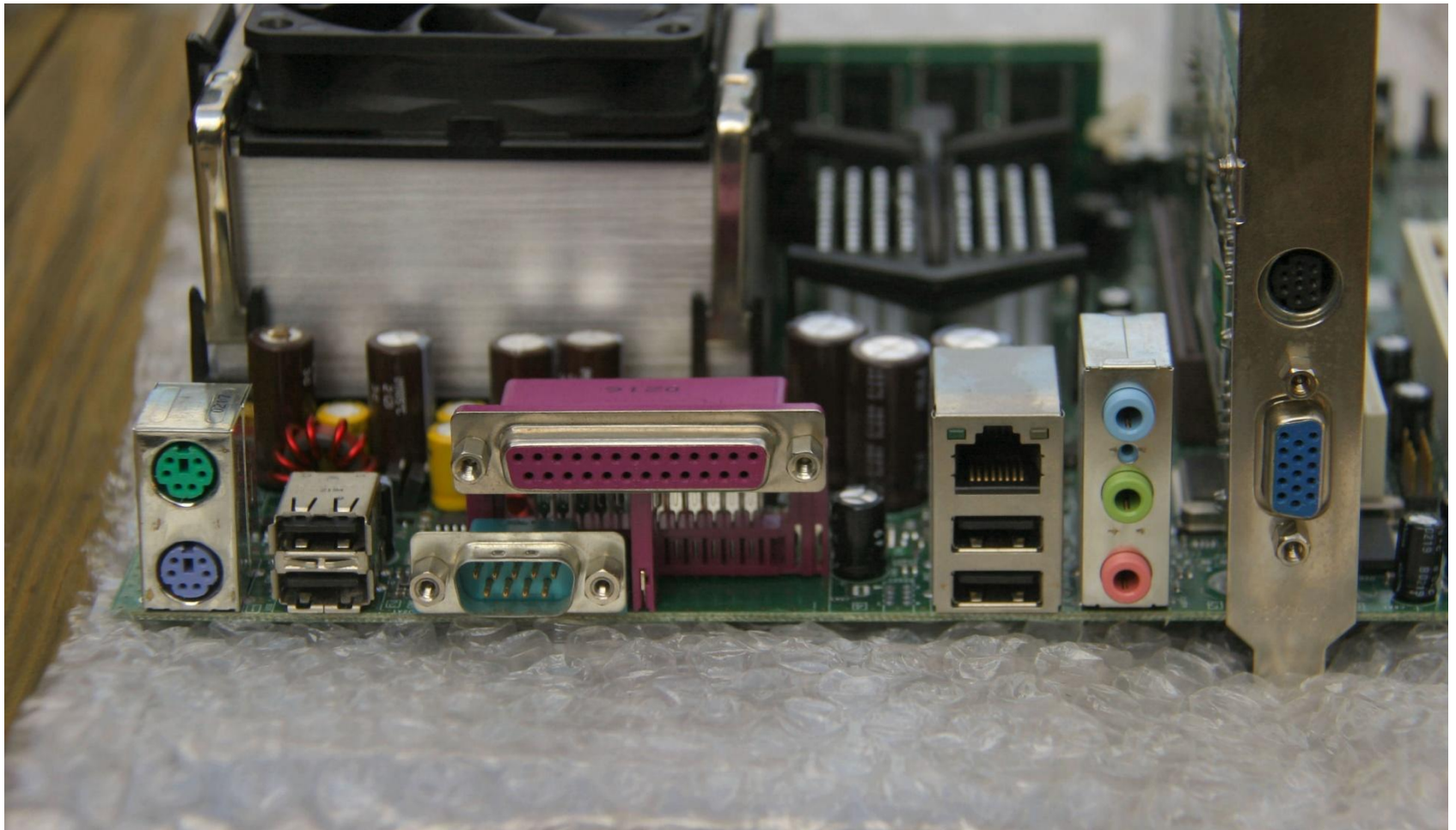
RH21

CB18

RH25

Peripheral Connection

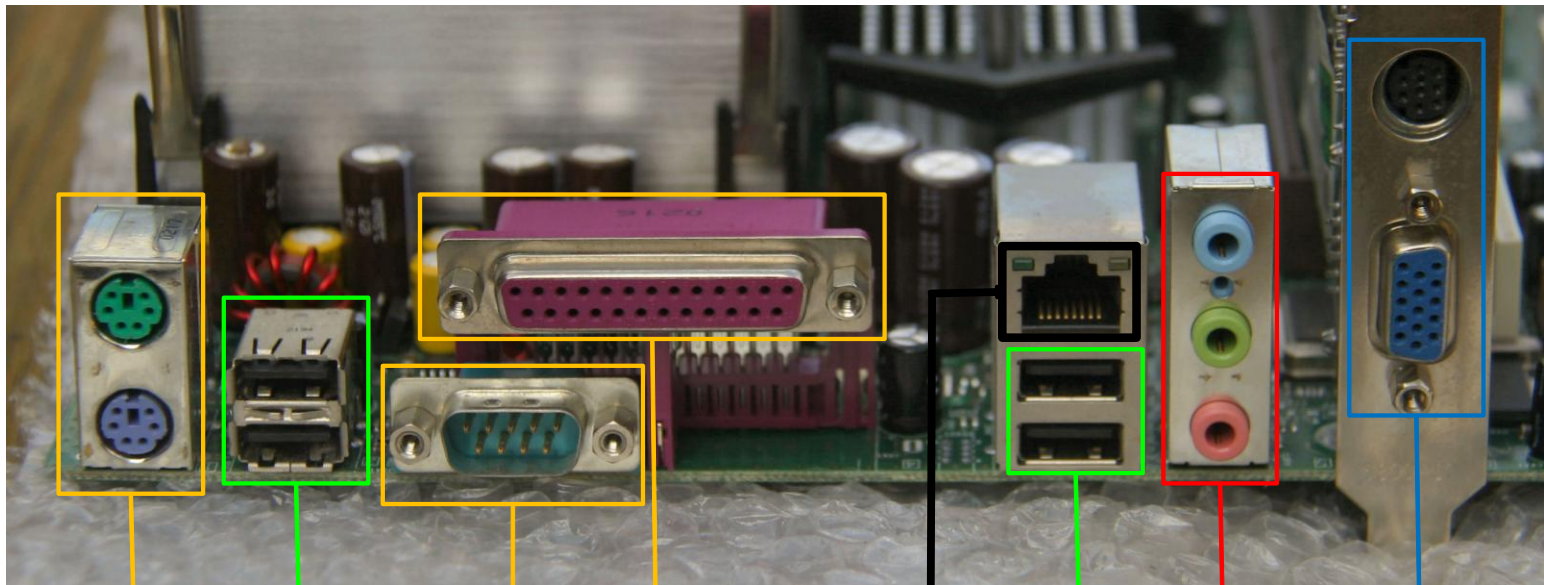




Connectors on Rear Panel

2003 Omni Tech Computer

Typical Output Connectors



Keyboard and Mouse
PS/2 Sockets
(obsolete)

Universal Serial Bus (USB)

Serial
(obsolete)

Parallel
(obsolete)

Network
Ethernet wired

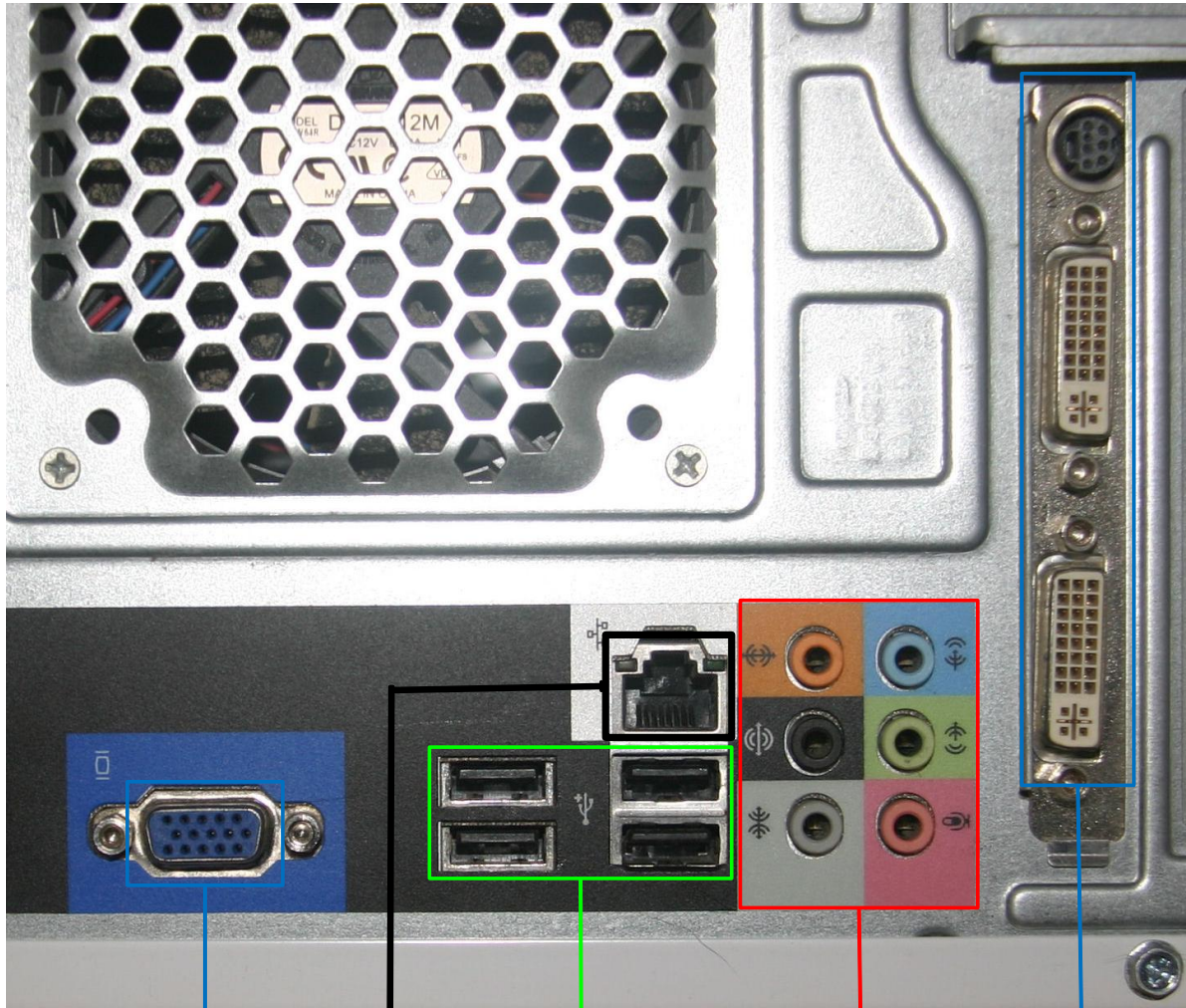
Audio
Blue: Line In
Green: Line Out
Pink: Mic

Monitor
Top: S-Video
Bottom: VGA



Connectors on Rear Panel

2008 Dell Inspiron 581 Desktop



Monitor
VGA

Network
Ethernet
wired

**Universal
Serial Bus
(USB)**

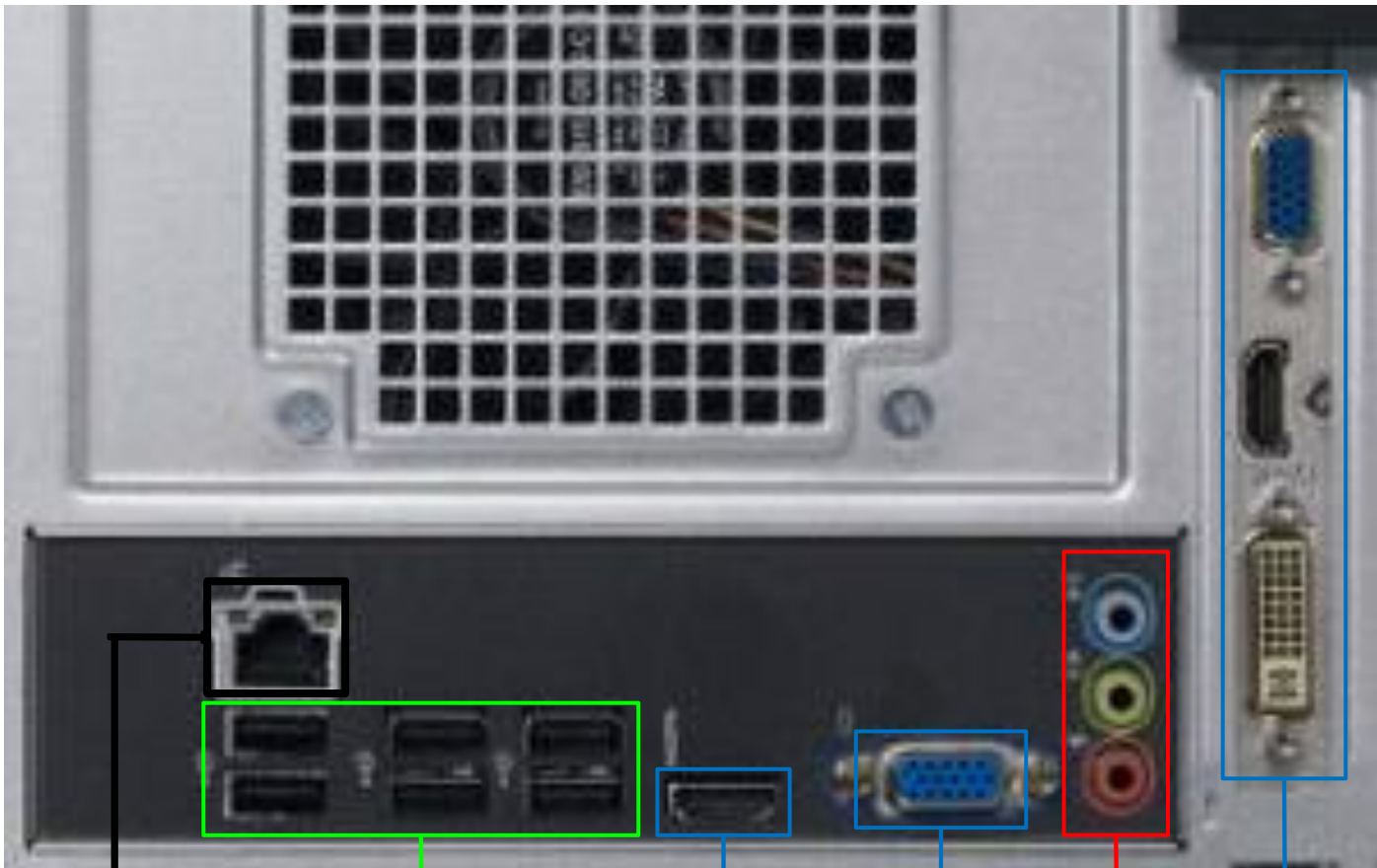
Audio
Blue: Stereo Line In
Green: Front Stereo Line Out
Pink: Microphone
Orange: Subwoofer or Center Out
Black: Rear Surround (Stereo)
Gray: Middle Surround (7.1) (Stereo)

Monitor
Top: S-Video
Middle: DVI
Bottom: DVI



Connectors on Rear Panel

2013 Dell Inspiron 660 Desktop



Network
Ethernet
wired

**Universal
Serial Bus
(USB)**

Monitor
HDMI
(motherboard chip)

Monitor
VGA
(motherboard chip)

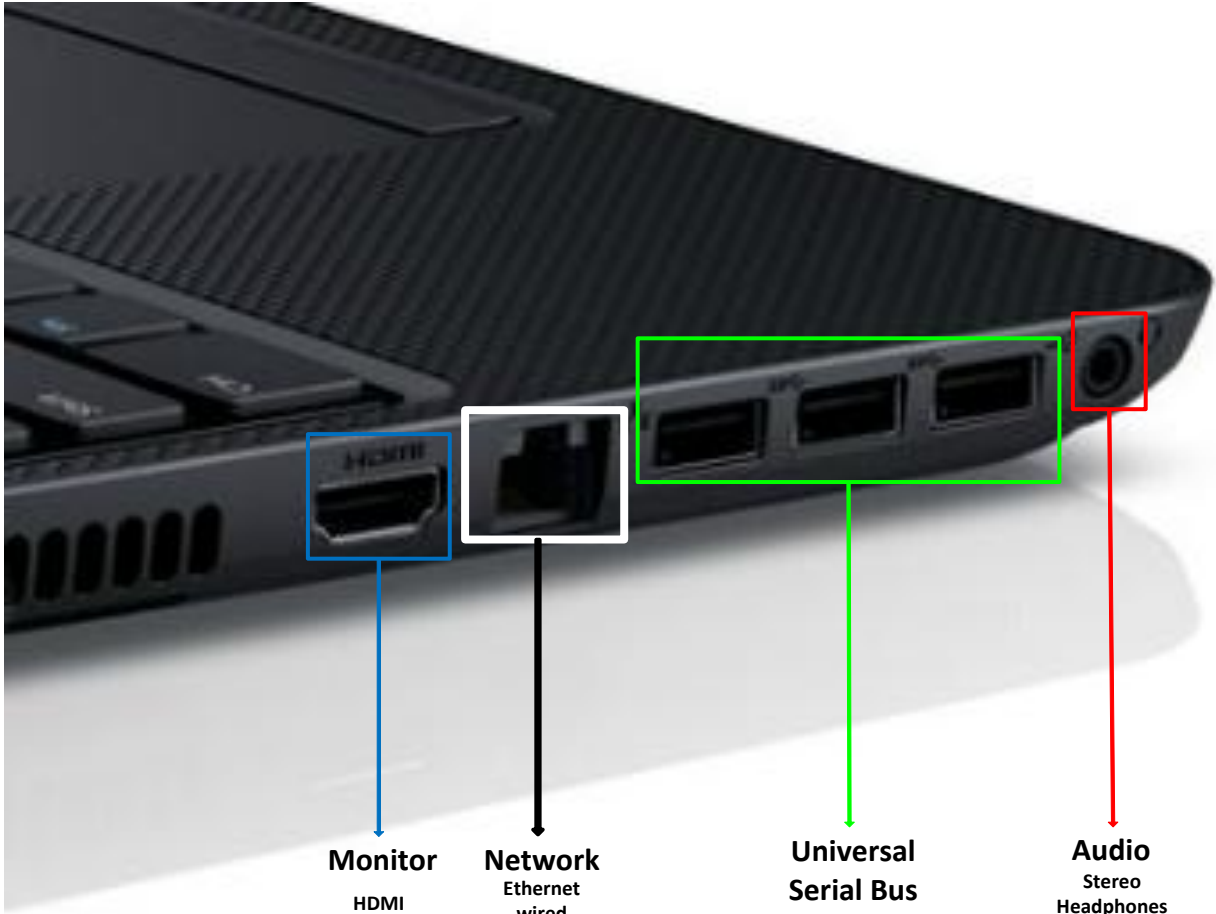
Audio
Blue: Line In
Green: Line Out
Pink: Mic

Monitor
Top: VGA
Middle: HDMI
Bottom: DVI



Connectors on Rear Panel

2013 Dell Inspiron 15 Laptop



Monitor
HDMI

Network
Ethernet
wired

**Universal
Serial Bus
(USB)**

Audio
Stereo
Headphones



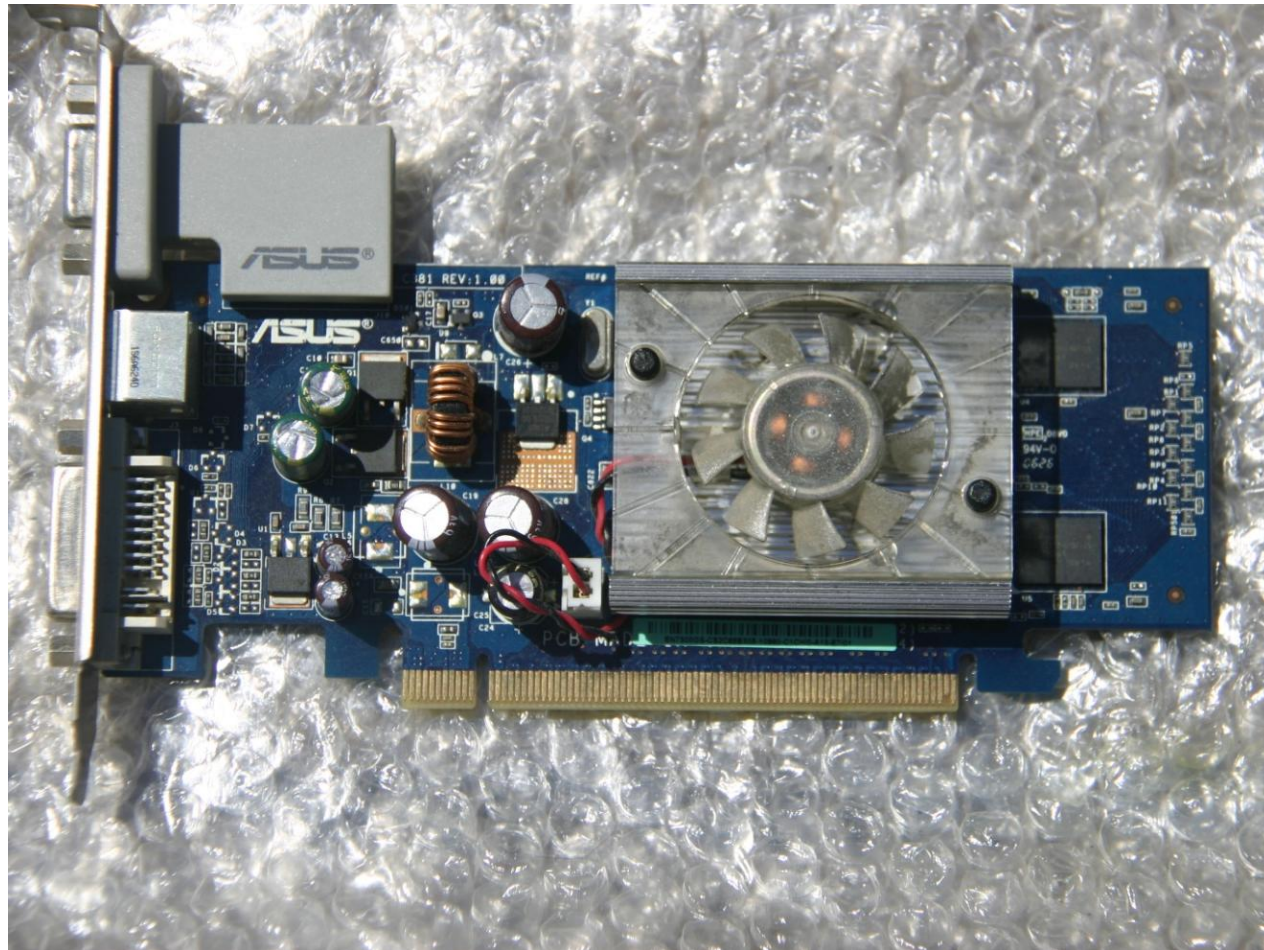
Video Graphics Card with choice of 3 connectors

VGA on left, S-Video in center, DVI on right

VGA: Video Graphics Array, 1980's to present, from computer technology

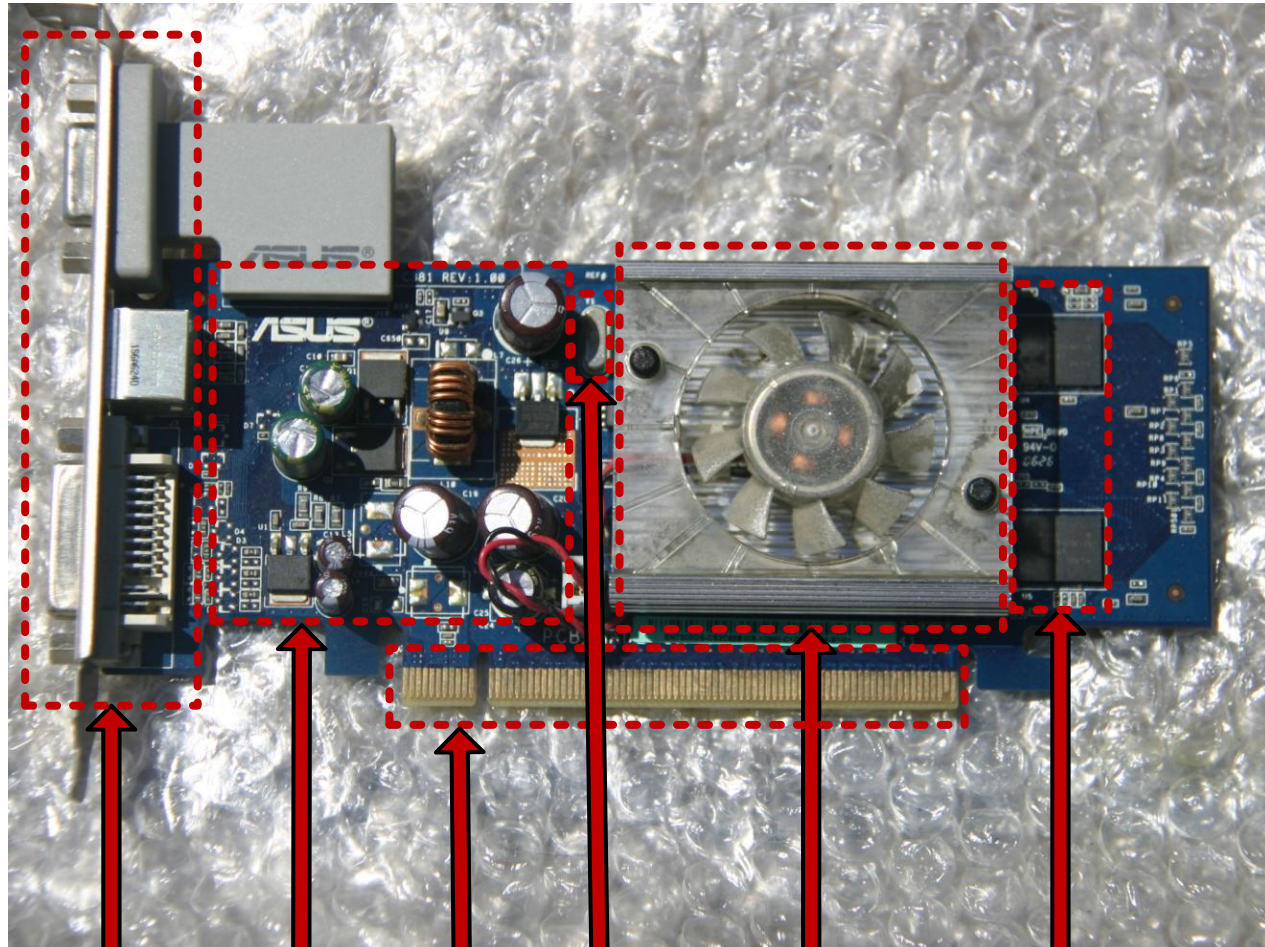
S-Video, Super-Video, 1980's to present, from television technology

DVI – Digital Visual Interface, 1999 to present, backwards compatible



Video Graphics Card

Video Graphics Card



Connectors

Output
Electronics

Bus to
North
Bridge
chip

Clock
Crystal

Graphics Control
Unit (GPU)

Flash
Memory



VGA Cable

Video Graphics Array

DE-15 connectors



S-Video Cable

Super Video



DVI Cable
Digital Visual Interface



HDMI Cable

High Definition Media Interface

Connection Type

Computer Cable

Display

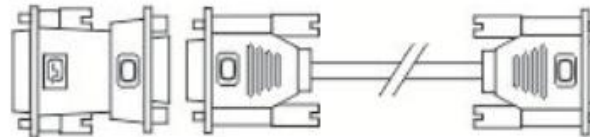
VGA-to-VGA
(VGA cable)



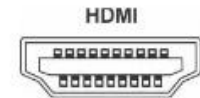
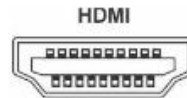
DVI-to-DVI (DVI cable)



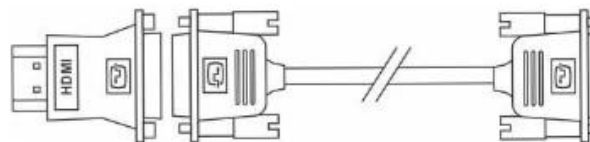
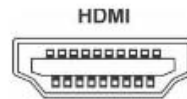
DVI-to-VGA
(DVI-to-VGA adapter + VGA cable)



HDMI-to-HDMI
(HDMI cable)

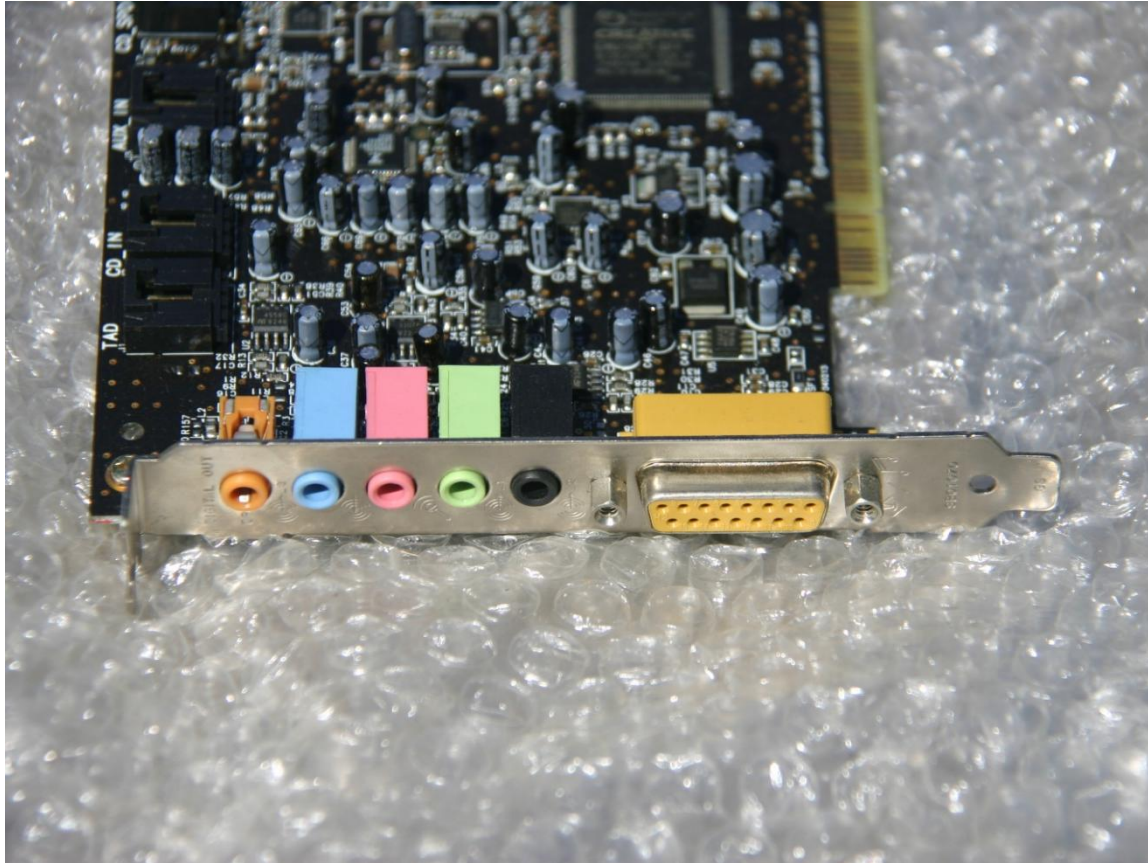


HDMI-to-DVI
(HDMI-to-DVI adapter + DVI cable)





VGA to HDMI Adapter
Video Graphics Array to
High Definition Media Interface



Audio Card

5. 1 Audio with Joystick / Midi port



Audio Card

Notice CD input at top, for the sound cable from the Optical Disk Drive



RCA Stereo to Mini-plug Cable

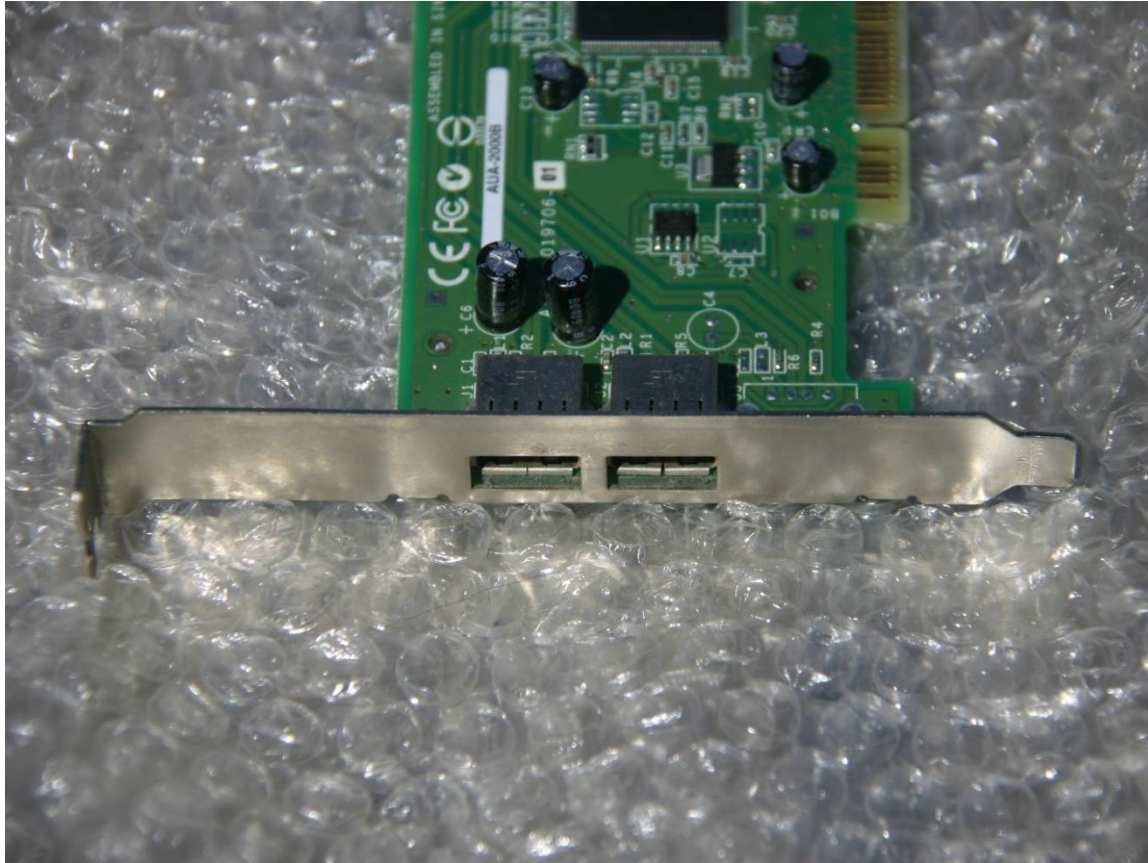
RCA plug left audio (white) and RCA plug right audio (red) to
Stereo Mini-plug



Two Video Cables

RCA plugs

yellow RCA plugs connect with small coaxial cable -- black RCA plugs connect with large coaxial cable



USB Expansion Card

adds two Universal Serial Bus connections that have direct access to the motherboard input / output bus



USB Expansion Card

adds two Universal Serial Bus connections that have direct access to the motherboard input / output bus



Universal Serial Bus (USB) Cable

Standard A USB plug (rectangular) to
Mini-USB plug (indented rectangle) (usually found on small peripherals)



Universal Serial Bus (USB) Cable

Standard A USB plug (rectangular) to
Standard B USB plug (square) (usually found on printers or other large peripherals)



**Firewire Cable, originated by Apple
(incompatible with USB)**



Network Card

wired Ethernet connector



Network Card

Ethernet



Ethernet Cable

RJ-45 Connector



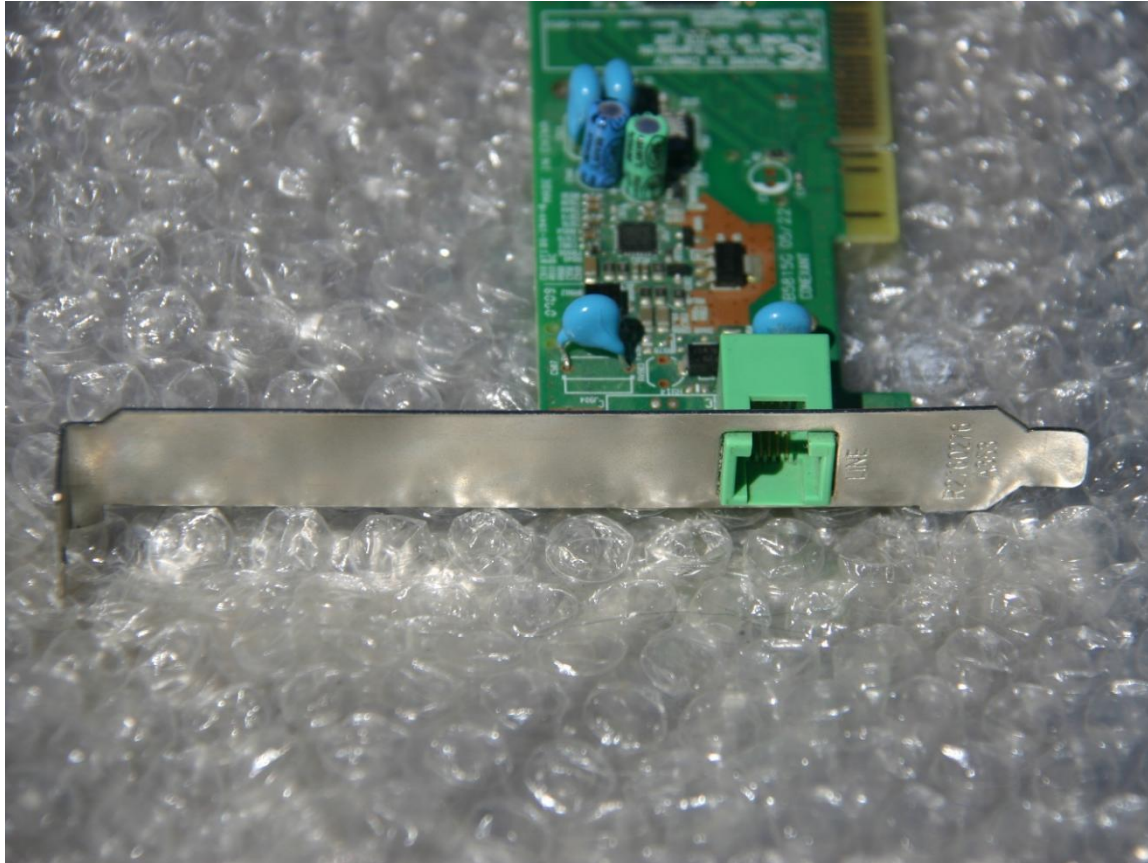
Cable Modem

Ethernet connection to your computer or router
(USB connection to your computer is also possible)
Coaxial cable connection to the cable company



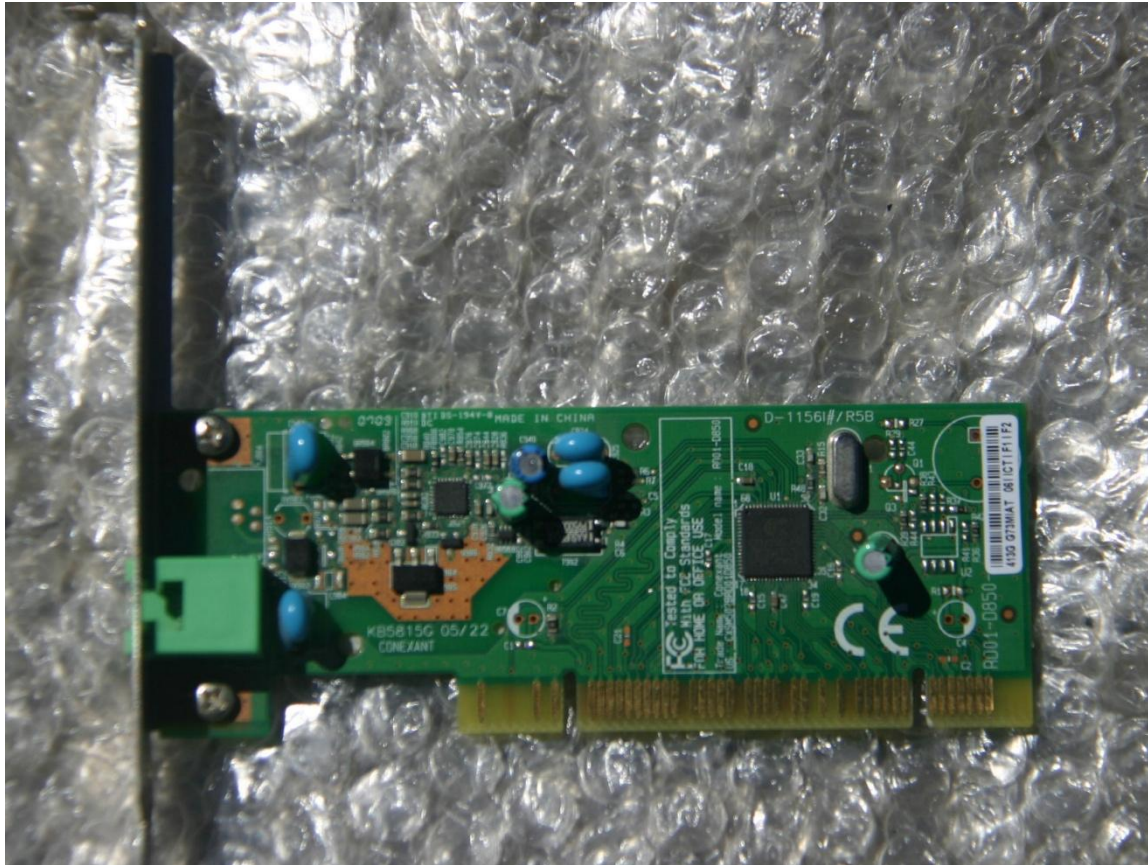
Coaxial Cable

RJ-59 Connector



Telephone Modem Card

standard telephone connector (RJ-14)



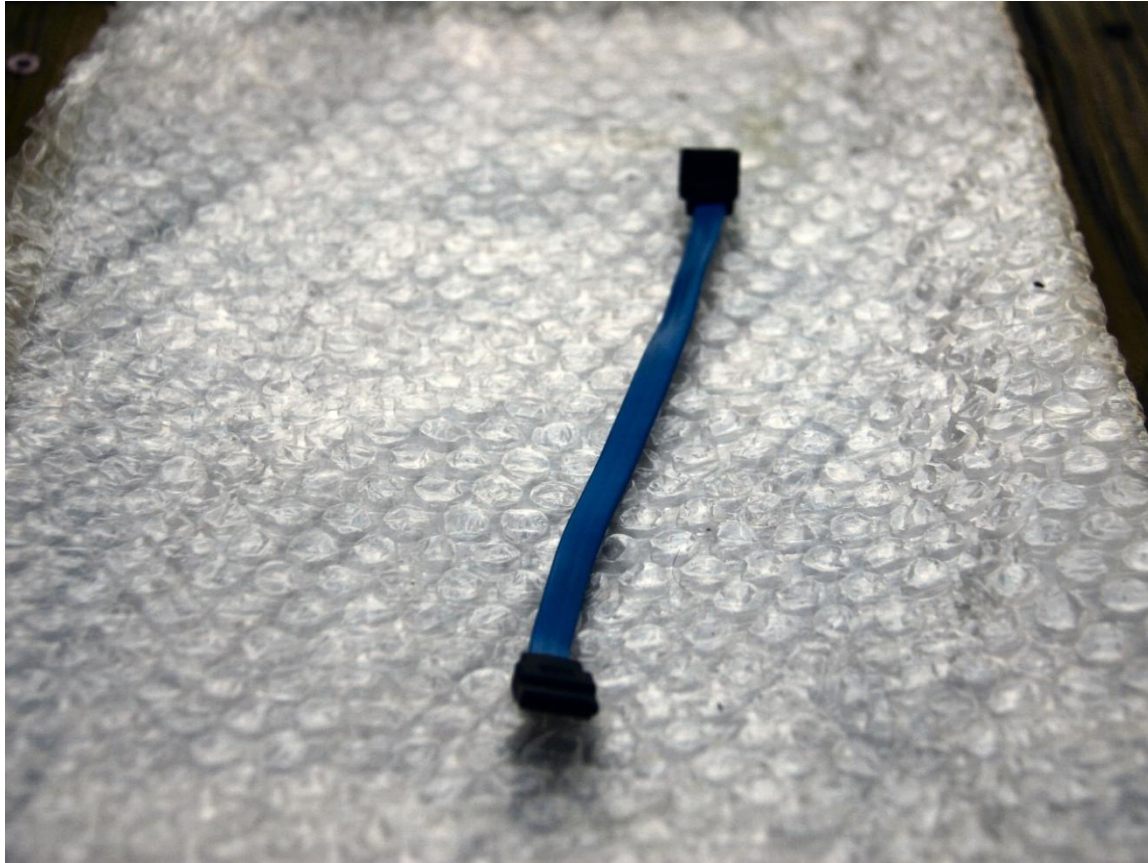
Telephone Modem Card

Standard telephone connector (RJ-14)



eSATA sockets

external Serial Advanced Technology Attachment



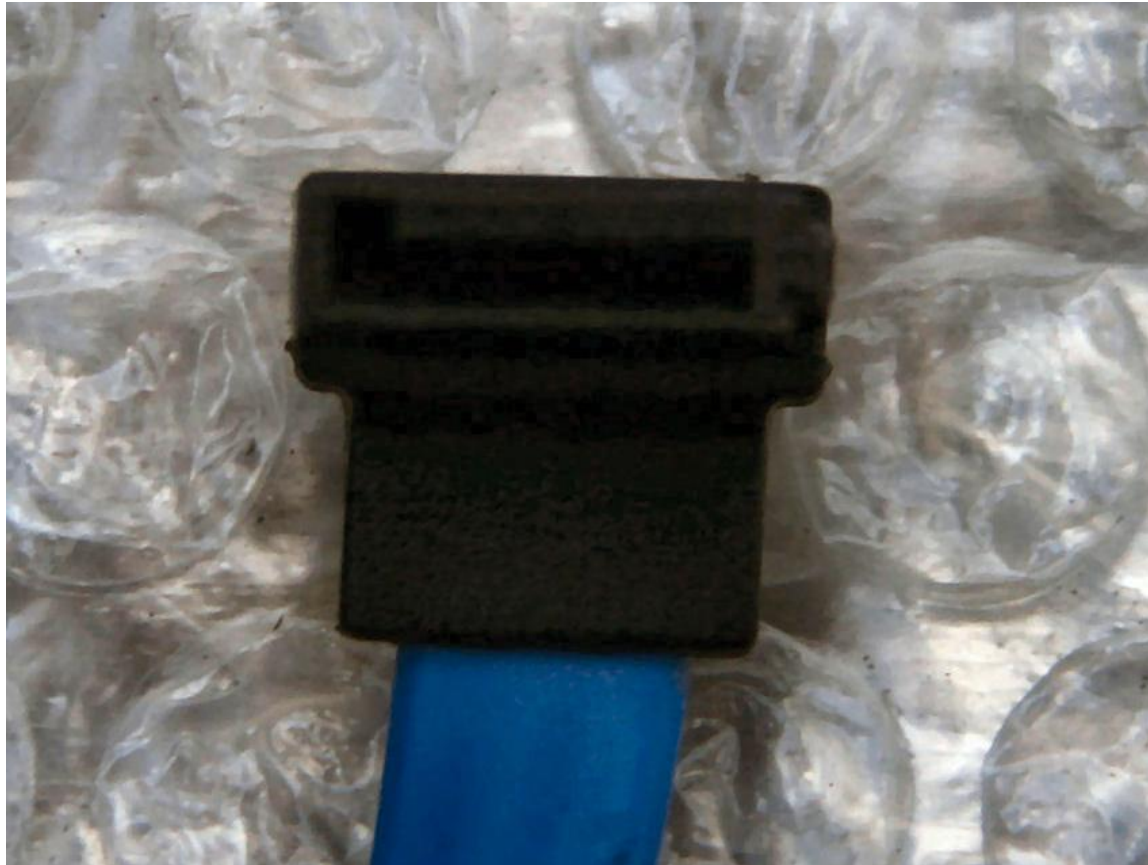
eSATA to SATA cable

external Serial Advanced Technology Attachment to
(internal) Serial Advanced Technology Attachment



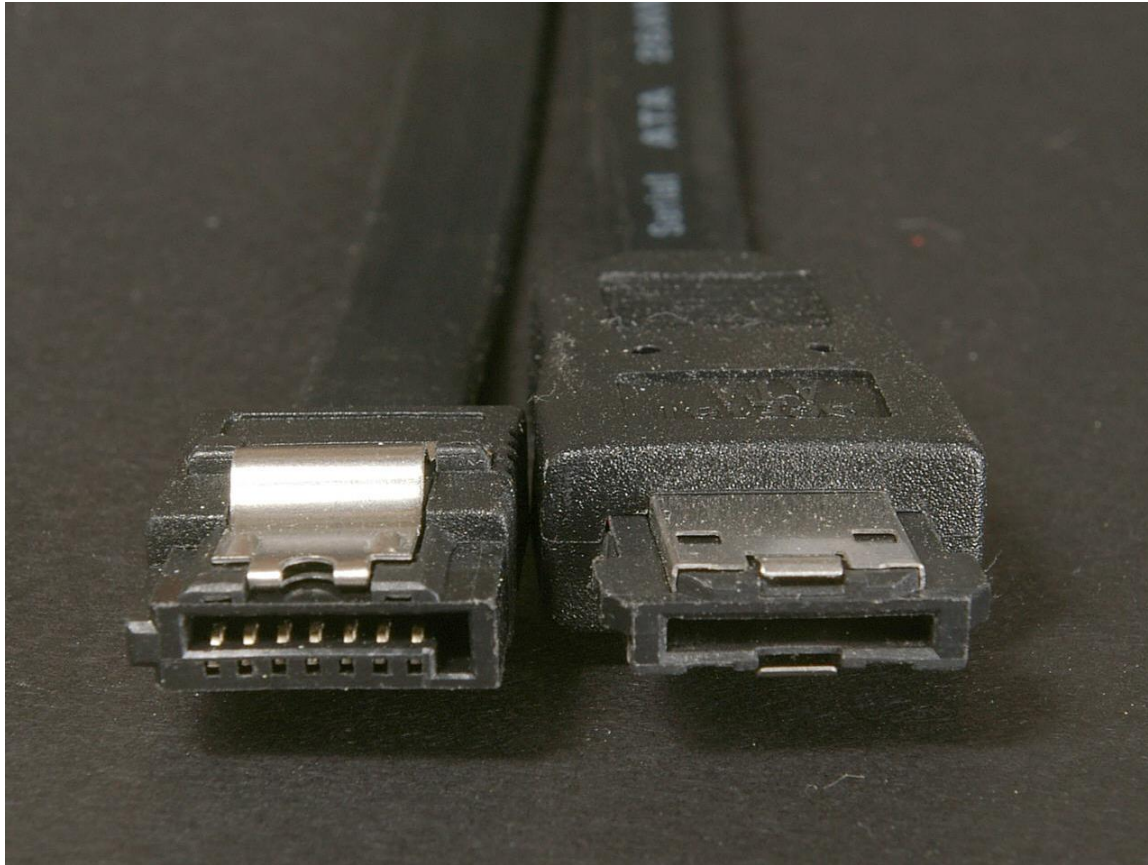
eSATA connector

external Serial Advanced Technology Attachment



SATA connector

(internal) Serial Advanced Technology Attachment



SATA (left) and eSATA (right) connectors

(internal) Serial Advanced Technology Attachment
external Serial Advanced Technology Attachment

end of presentation