USING WEBCAMS TO SPY ON SOMETHING

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Web location for this presentation
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SUMMARY

• You can use various models of Webcams to spy on your home(s), business(es), and pets. They can alert your cell phone and/or your computer when they detect motion.
SUMMARY (continued)

• In addition to these basic functions, the Internet cloud can now provide you with:
  A means of communicating with a Webcam from points unknown
  and
  cloud storage for saving snapshots and video clips either automatically when motion is detected by your Webcam or on-demand.
TOPICS

• Webcam Basics
• History of Webcams
• Legal Issues Regarding Webcams
• Security Issues Regarding Webcams
• Wired USB Webcams
• Wi-Fi Webcams
• Cloud-based Webcams
• A Universal Camera Stand
• Powerline Ethernet Extensions
WEBCAM BASICS

• According to https://en.wikipedia.org/wiki/Webcam

A webcam is a video camera that feeds or streams its image in real time to or through a computer to (a) computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and email as an attachment.

<end of quote>
WEBCAM BASICS (continued)

- The term "Webcam" is sometimes used for wired USB-connected cameras only.
- The term "Webcam" is more commonly used to refer to wired USB-connected cameras, wired IP cameras (IP=Internet Protocol), and Wi-Fi cameras.
WEBCAM BASICS (continued)

• Some Webcam manufacturers refer to their Wi-Fi cameras as "IP cameras"
• Other Webcam manufacturers use the term "IP camera" to refer to Webcams that are connected directly to your local network by means of a regular Ethernet cable or a "Power Over Ethernet" cable
WEBCAM BASICS (continued)

• Details about Webcams:
  See
  http://www.ebay.com/gds/5-Types-of-IP-Cameras-10000000178450438/g.html
  and
HISTORY OF WEBCAMS

• 1994: Connectix's "Quickcam" for Macintosh (serial port and parallel port models). The very first model had a "mini DIN" serial plug:
Pair of **female Mini DIN-8** connectors used for **RS-422** serial ports on a **Macintosh LC** computer
HISTORY OF WEBCAMS (continued)

• 1996: Wired IP Webcams with a Cat 5 jack
• 1998: Logitech's "Quickcam Home" and "Quickcam Pro" (USB 1 and parallel port models)
• 2000: Webcams integral to laptops and some monitors
• 2001: Webcams with a wired USB 2 cable
HISTORY OF WEBCAMS (continued)

- 2005: Wi-Fi wireless cameras
- 2006: HD Webcams (HD = "High definition")
- 2012: "Drop Cam" Wi-Fi Internet Webcam
- 2014: "Drop Cam" evolved into "Nest Cam"
HISTORY OF WEBCAMS (continued)

• 2015: Netgear "Arlo Wire-Free" (= first battery-powered, totally-wireless camera; cannot detect motion when pointed through a clear glass window)

• 2016: Netgear "Arlo Q" (= only AC-powered Webcam that we tested that can detect motion when pointed through a clear glass window)
LEGAL ISSUES REGARDING WEBCAMS

Legalities for you to be aware of:

• Most Federal and state laws regarding video surveillance pertain to recording audio, so a Webcam that does not record audio (or turning off the audio-recording capability of a Webcam that does record audio) may be safer for you to use from a legal standpoint.
LEGAL ISSUES REGARDING WEBCAMS (continued)

Legalities for you to be aware of (continued):

- Every state of the U.S.A. and every country has different laws pertaining to the use of Webcams.
- "Reasonable expectation of privacy" is a legal precedent that keeps lawyers employed.
- Different laws apply to hidden cameras versus cameras that are in plain sight.
LEGAL ISSUES REGARDING WEBCAMs (continued)

Legalities for you to be aware of (continued):

- See
  http://www.supercircuits.com/resources/blog/hidden-cameras-and-the-law
  and
  and
LEGAL ISSUES REGARDING WEBCAMS (continued)

Legalities for you to be aware of (continued):

• See also
  http://www.brickhousesecurity.com/category/hidden+cameras/hidden+spy+camera+laws.do and
  https://www.care.com/a/nanny-cam-yes-or-no-1209271139
LEGAL ISSUES REGARDING WEB CAMS (continued)

Legalities for you to be aware of (continued):

• For video surveillance laws listed by states of the United States of America, see http://www.backstreet-surveillance.com/security-cameras-made-easy-1/state-video-audio-surveillance-laws-regulations.html
SECURITY ISSUES REGARDING WEBCAMS

Hacker attacks on Web cams:

• According to https://en.wikipedia.org/wiki/Camfecting

**Camfecting**.. is the fraudulent process of attempting to hack into a person's webcam and activate it without the webcam owner's permission. The remotely activated webcam can be used to watch anything within the webcam's field of vision...
Hacker attacks on Web cams (continued):

- According to https://en.wikipedia.org/wiki/Remote_administration_software

  "A remote administration tool (RAT) is a piece of software that allows a remote "operator" to control a system as if he has physical access to that system." One of the results of using a "RAT" might be screen/camera capture or image control."
SECURITY ISSUES REGARDING WEBCAMS (continued)

Hacker attacks on Web cams (continued):

- A **two-router "Demilitarized Zone"** is an effective way to block "camfecting" and "RAT" hacks.

See

http://aztcs.org/meeting_notes/winhardsig/secureWeb/secureWeb.pdf
Reference:
https://www.grc.com/nat/nat.htm
SECURITY ISSUES REGARDING WEBCAMMS (continued)

Hacker attacks on Webcams (continued):

• To protect against Camfектing and Remote Administration Tool (RAT) attacks from hackers on the Internet, you can connect a Webcam to a computer or a router in the DMZ area of a two-router DMZ configuration.
Reference:
https://www.grc.com/nat/nat.htm
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https://www.grc.com/nat/nat.htm

Wireless WiFi or Cloud-based Webcam
Internet (WAN) → External NAT Router → Internal NAT Router → Highly Protected Intranet (LAN)

Additional Wireless WiFi Router

Wireless WiFi or Cloud-based Webcam

Reference:
https://www.grc.com/nat/nat.htm
WIRED USB WEBCAMS

• See
  http://aztcs.org/meeting_notes/winhardsig/webcams/parts/surveillance1-usb-webcams.pdf
WI-FI WEBCAMS

• See
http://aztcs.org/meeting_notes/winhardsig/webcams/parts/surveillance2-WiFi-webcams.pdf
CLOUD-BASED WEBCAMS

- See
  http://aztcs.org/meeting_notes/winhardsig/webcams/parts/surveillance3-cloud-webcams.pdf
A UNIVERSAL CAMERA STAND

• If your Webcam has a standardized threaded tripod hole, the Videosecu company provides a versatile stand for it:
VideoSecu 2 Pack 2-6 inch Adjustable Security Camera Metal Brackets Pan Tilt Wall Ceiling Mounts for CCTV CCD Box Body Camera Home Surveillance System 1SH

by VideoSecu

136 customer reviews | 14 answered questions

List Price: $84.95
Price: $16.99 & FREE Shipping on orders over $35. Details
You Save: $67.96 (80%)

In Stock.
Want it tomorrow, Feb. 8? Order within 9 hrs 29 mins and choose One-Day Shipping at checkout. Details

Sold by Warehouseseller and Fulfilled by Amazon. Gift-wrap available.

- VideoSecu brand. If you did not see VideoSecu logo on box, please report to Amazon.com
- 360 degrees turn and rotation, 90 degrees tilt
- All parts interchangeable, all metal construction
- Base plate 2 3/8" diameter, 1/4" / 20 threads throughout
- Each set includes two 2" shafts, one 2" X-base, one 1" base extender, one 2 3/8" round base and one head
VideoSecu 2 Pack 2-6 inch Adjustable Security Camera Metal Brackets Pan Tilt Wall Ceiling Mounts for CCTV CCD Box Body Camera Home Surveillance System 1SH
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POWERLINE ETHERNET EXTENSIONS

• The wireless Wi-Fi communications between your WiFi Webcams or your cloud-based Webcams AND your Network base station are subject to the limitations of all Wi-Fi communications
POWERLINE ETHERNET EXTENSIONS (continued)

• You can use various wired, wireless, and powerline network technologies to move your Netgear base station or a second wireless Wi-Fi router closer to your wireless Webcams:
PowerLine AV2 2000
Gigabit Starter Kit
Create a PowerLine network with Gigabit speeds

Plug-and-Play feature means creating a PowerLine network is simple and easy

Speeds up to 2000 Mbps\(^1\) using HomePlug AV2 MIMO technology make it ideal for activities like 4K video streaming

MIMO Technology provides better coverage and more stable network

DHP-701AV
Web servers at https://arlo.netgear.com

Internet Cloud

Existing LAN and Broadband

Powerline Network ***

Your computer, tablet, or cell phone

Web Browser or your Arlo app

Netgear Base Station

Wireless Wi-Fi

Netgear Arlo Webcam
POWERLINE ETHERNET EXTENSIONS (continued)

• The use of powerline networking extensions for wired Ethernet that conforms to the "Homeplug AV" "AV2000" standard lets you use existing "live" power cabling (such as existing "Romex) to extend the wired network "reach" of an existing router or cable modem. For a how-to document, see http://aztcs.org/meeting_notes/winhardsig/networks/powerline/powerline.pdf
Existing Broadband Modem and Router

House Electrical Wiring

Netgear Base Station or additional Wireless Wi-Fi Router

Cat 5/5e/6 Cable

Cat 5/5e/6 Cable
Questions

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