RockridgeResidents.Org Presents:

Security Cameras 101

Thoughts from a user who's put
in his own system

Agenda

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Goal of this presentation

- Even if you're the type of person who "just wants to write a check", this will get you familiar with the concepts involved in installing a camera/closed-circuit-TV (CCTV) system, so you're a better educated purchaser.

Disclaimers

- ☐ Consider hiring a pro for the wire running and camera mounting.
  - ■ Setting up your own system does require you to be aware of electric code guidelines.
- ☐ Do your own homework.
  - ■ I am only an end user, I am not an electrician or professional installer, so I may not be doing everything correctly, you need to do homework yourself and not sue me if you have an issue.
- ☐ This is completely "pay-it-forward" for me.
  - ■ I'm not getting any kickbacks/referral $$/forgiven fees for anything we discuss, so I don't really care which option you go with. I'm interested in getting as many people to pick <u>an</u> option, so our neighborhood is known as someplace where we'll have a recorded history of any trouble-makers, and hopefully the bad guys will go elsewhere.

My Background

- ☐ I'm just a regular consumer who's wife started getting a little concerned about the crime in the neighborhood. I'm not technical for a living.
- ☐ The "trigger" point was, as it often is, a vandalism event that happened to us. It was extremely innocent in comparison to anyone else's experience, but enough to infuriate us as we had no idea who was responsible. (neighborhood kids? Homeless? Day Laborers?) In order to qualify as a "thief", you have to actually take something…

Why I put up cameras

- 55% of the value to me is the ability to remotely view the cameras on my cellphone in the event of a false alarm.
  - I've had 2 instances where I was erroneously contacted about a break-in, and the ability to confirm that everything was fine gave me piece of mind. Once was when I was alone and wife/kids were out of town, so I was definitely a little skittish about potentially coming home to a robbery in progress, and it's not like I'd want to ask my neighbors to put themselves in harms way by checking it out. The police charge for false alarms, so this was a simple way of confirming that life was good.
- 20% of the value to me is checking who's at the front door before I answer it late at night.
  - Because of the camera position, I can tell if someone is ducking/hiding through any PC without even getting close to the front of the house
- 25% of the value to me is security in case the bad guys do come. Of that, there's 2 components:
  - Recording what's happening on the sidewalk outside my house in the event of a mugging there or someone running away from a mugging, so there's legit evidence of what happened. (ie, no need for RockridgeNeighborhoodWatchNetwork emails with text-based and potentially vague descriptions about who was the guy who robbed you/broke into your car, but an actual picture.
  - Recording of the bad guys stealing my stuff. This is clearly the smallest overall percentage since my stuff will still be gone, but hopefully this will help the police somewhat.
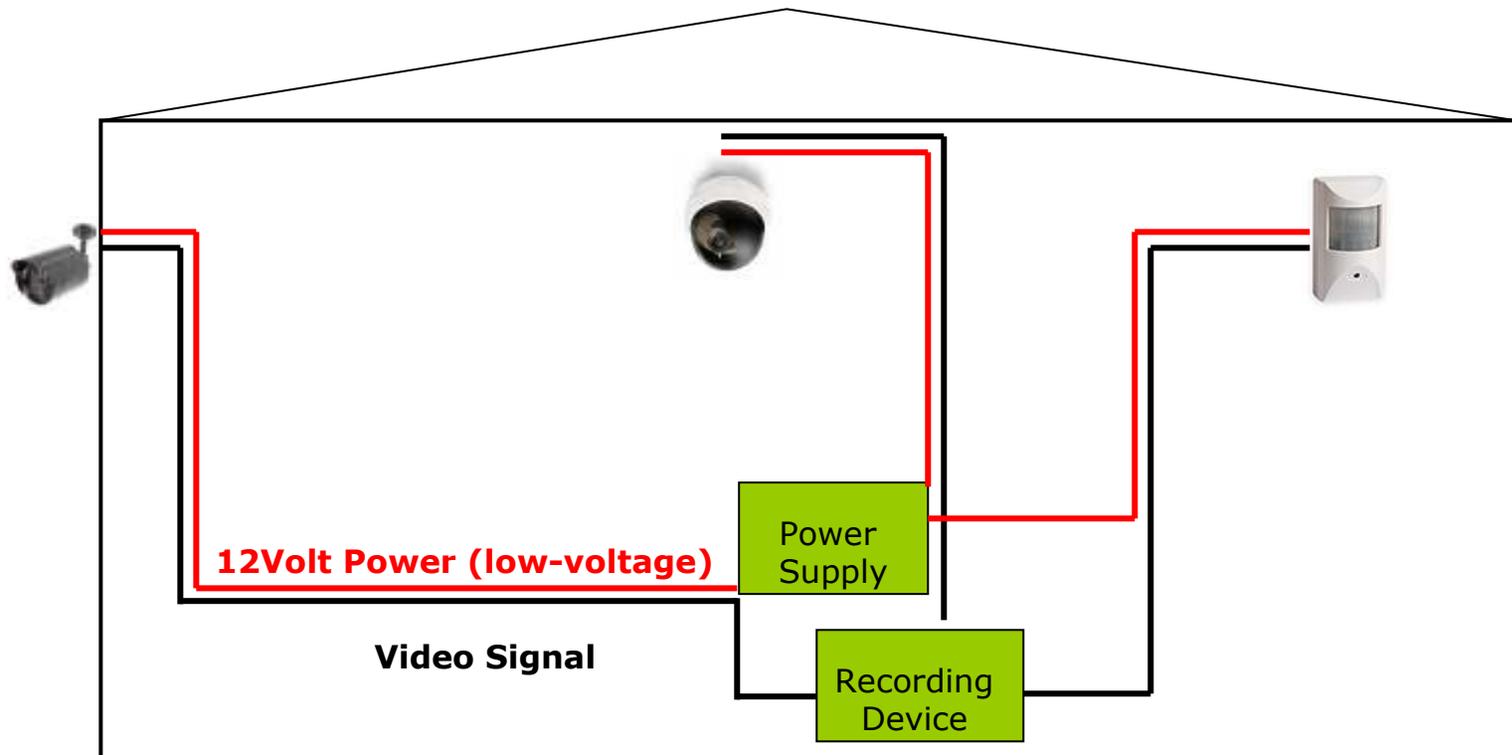
Overview

- A CCTV system is really just a camera plugged into a VCR. Ok, not really, but close.
- CCTV Cameras are more physically robust, and typically just have power & video cables to hook into your recorder.
- Based on the software, you can either record 24x7, or only when the recorder "detects" motion because the picture changed
- The all-in cost is anywhere from $300-$2000 or more. Details on latter slides.
- To record, you have 3 options:

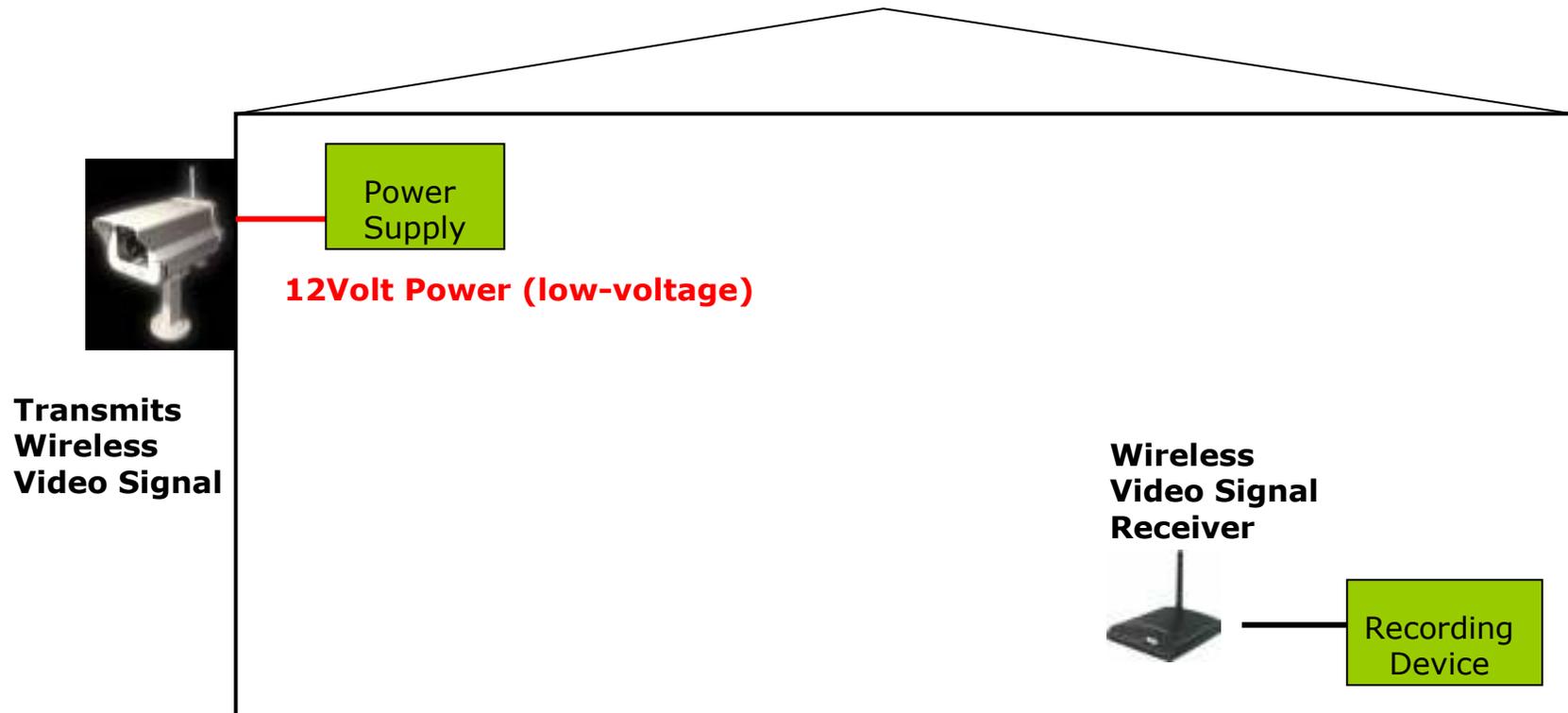| Option	Pros	Cons
A "VCR" type machine, which records to a video tape.	☐ Very Cheap	☐ Record over themselves every 2-24 hours, and there's no easy way to grab a screenshot ☐ Most don't have built-in internet interface
Just like TIVO's are VCR-type machines that record to hard disk, there are CCTV recorders that record your video signal to a hard disk.	☐ Ease of setup & use ☐ Most have a built-in internet interface, so you can view images from any PC in your house or over a PDA cellphone	☐ Cost ☐ Just like your TIVO, you can't easily increase hard disk space to retain a longer history
A card to put into your computer, so you can use your existing computer to record	☐ Cost (many of us have old PCs) ☐ Ease of expandability ☐ Built-in internet interface	☐ Higher Difficulty of setup ☐ Need either a dedicated PC or high-power PC

Picture #1 – Hardwired Camera

12Volt Power (low-voltage)

Power Supply

Video Signal

Recording Device

Picture #2 – Wireless Camera

Power
Supply

12Volt Power (low-voltage)

**Transmits
Wireless
Video Signal**

**Wireless
Video Signal
Receiver**

Recording
Device

What types of cameras are available?

There are many types of cameras out there – here's just a few examples

Hanging/Pendant

"Bullet"

Dome

Covert

Wireless

How much to do it?

To Do-It-Yourself, anywhere from $150 (if you have an old PC laying around) to $1000 for the recorder, plus cost of cameras:

1. Cameras. The "average" wired camera is priced from $125 to $175, my Vitek brand, night vision color 1/3" 480line cameras are $156 if you get them from automatedoulet.com.
2. Either:
   a) A CCTV DVR, which is basically a tivo-type unit with camera inputs and specialized software. This runs anywhere from $700-$2000, based on # of cameras you want to record, quality, internet/PDA viewing.
   b) A CCTV card for computer. This could run $150->$1000, mine cost $400 and is a pretty dang decent one. It's the AverMedia NV5000. It's very picky though and only works on Intel computers (not AMD). If you opt for the same card I have and are computer-savvy, you can read through the hardware recommendations on the AverMedia site. Warning, it's pretty technical, as I'm sure they need to legally defend themselves (http://www.avermedia.com/nvd/hardware-recom.asp)

Note: You do NOT need both the computer and the DVR, it's one or the other

3. Cabling to run from the camera to the PC or DVR (unless you get wireless cameras, which I know very little about since I don't have them). You can use either
   a) CAT5 network cable with adapters on the end (I know nothing, but Brandon can help there), or
   b) RG6 (video signal) and 18gauge/2 conductor (for low-voltage power).

How Hard Is It?

☐ If you're comfortable with getting up on a ladder, have easy access to your attic, and know how to use a drill, this is pretty basic stuff. The first time you drill a hole through your outer wall is a little freaky, but once you get in the attic and look around at how craftsman style homes are built, you realize that it's all very simple.

☐ Consider camera placement before purchasing cameras. If you're only going to have one, then putting up high where you just grab a shot of the top of the perpetrator's head isn't going to be useful as all a jury will ever think is "yes, the suspect had a bald spot". If you have more than one, that's less of an issue.

☐ If you're going to go through this hassle, don't skimp on the most important bit and get a cheapo camera. Keep in mind that the jury system requires "proof beyond a reasonable doubt", so getting something cheap and grainy won't really help you that much if the bad guys come knocking.

Examples of Where to Buy

Contact Info is listed here to make life easier on you, but you need to do your own homework to make sure you like these people. I have personal dealings with the online vendors in #3 and was happy, but you need to form your own opinion.

- ☐ **Option #1: ADT/Bay Alarm/etc.**
  - ■ www.google.com ☺

- ☐ **Option #2: Pro-install of a DIY-friendly system**
  - ■ Still Reseaching

- ☐ **Option #3: DIY**
  - ■ Storefront
    - ☐ Lasher's Electronics, 1734 University, (510) 843-5915, info@allashers.com
  - ■ Online
    - ☐ AutomatedOutlet.com
      - ▪ Brandon Stapp, Brandon@automatedoutlet.com, (214) 245-4594
    - ☐ Tech-Home.com
      - ▪ Brian Dye, Brian@tech-home.com, 417-368-0995

Lessons Learned

I didn't follow all these, but I sure wish I did:

- ❑ For better picture quality:
  - ■ Get a decent camera with as big a lens as you can afford (at least 1/3")
  - ■ Get as many "vertical lines of resolution" as you can afford. At least 400, ideally 480 or more.
  - ■ Even if you have a "low-light" camera (measured as "lux", ie 0.2 lux), put up motion or fulltime lighting anyhow. It'll make things much better.
  - ■ Try to avoid all-in-one camera + IR lights (for night vision) again as the picture gets foggy.
  - ■ I'd get a separate camera and separate IR illuminator – nearly the same total cost
  - ■ If you can afford $700+ per camera, research the HiDef ones – they put DirecTV HD to shame!
- ❑ The best Picture Quality camera isn't a guarantee:
  - ■ Think about positioning since, if it's too high, all you get is the top of people's heads. (plus it's a pain to clean the never-ending spider webs)
  - ■ Trusted the experts who told me to not get covert/hidden cameras as conspicuous cameras are a good deterrent. I wish I had gotten something I could have mounted right at eye level, so it's close in.
- ❑ Careful if you use a PC
  - ■ All the various software I've tried hogs up the CPU so if you're using the PC for something else you're going to have issues. Dual cpu machines (Core2Duo) are cheap now; if I had gotten one of those, I'd still have 1 CPU left to use which would be better.

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Appendix A

Mounting Pictures

External Camera Mounted

Wire goes into house above this ledge

External Camera Size

Internal Camera Mounted

Appendix B

Camera Pictures

Quad View of multiple cameras

This can be pulled up on any PC in the house through Internet Explorer

External Camera Sample - Day

External Camera Sample - Night

Internal Camera Sample Pic

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Cellphone PDA Camera Pic Sample

It's hard to take a picture of a cell phone and get it in perfect focus, but trust me – the picture is pretty clear. It is a little slow over the AT&T cellular network, but it's usable.

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