



Micro Local Cameras – Best Practices

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With an investment in one or more tower and rooftop cameras (we call them Micro-Local cameras) there are going to be some high expectations from viewers as well as station management. Adding reliability and security to these cameras doesn't have to be complicated. There are a few things you can do to make sure your teams get everything they expect from your investment by following a few suggestions we will present in a series of articles called:

Best Practices - Camera Installation/Deployment

In this article we are going to review the steps you can take to assure the quickest recovery from issues that can force you to lose access to video from your cameras.

The Internet is a wonderful thing but like the old west, while there are regulations and standards, there are many people that do not adhere to the rules. Add software/firmware bugs into the mix and you can assume that, from time-to-time, you will encounter issues that demand your attention. Here are a few things you can do to make recovery as simple as possible.

Make Sure You Have FTP Access to Your Axis Cameras

If you have one or more Axis cameras, you should enable FTP access to each one. By default, this means

Axis Cameras Support a *hidden* recovery feature only available through FTP Access

you must grant *incoming* access at the site to port 21 (in addition to ports 80 for HTTP and 554 for RTSP). Axis cameras allow you to reset them through a simple FTP command. While you can do a reset on the camera's maintenance web page (via HTTP) – often when a camera is exhibiting issues the camera's internal web server is non-

functional (this is very common). However, we've found that when this happens the FTP link is *still available*, and a reboot of the camera can be accomplished by sending the following command at the camera's FTP prompt:

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$ftp>quote site reboot
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Add a Router & IP Controlled Power Switch

When your camera is in some far-flung location (as most are), or is located in a secure area where it can be difficult to gain swift access (e.g. on top of a Bank where you have to request access 3 days in advance) – then having a way to do a complete power-cycle of all equipment at the remote site without doing a site visit is a clear advantage. Remote reboots can include the camera, power injector, router and cable/DSL modem. There is an easy and economical way to set this up.

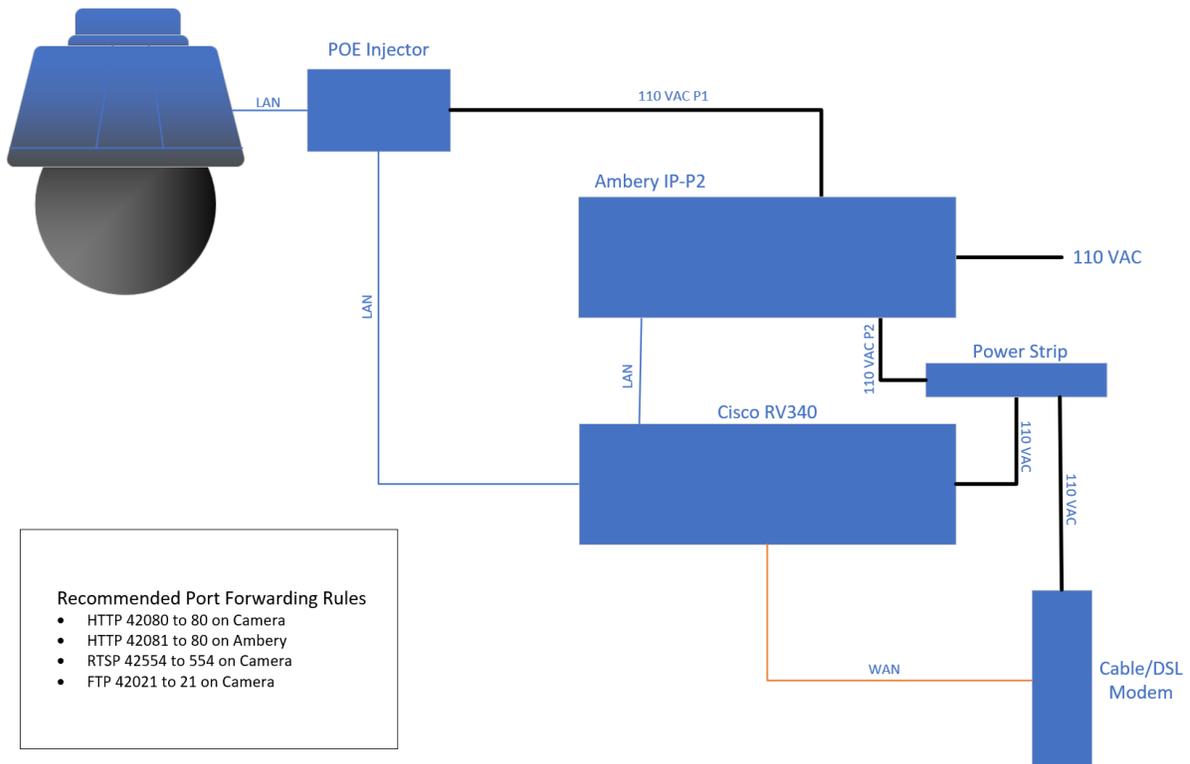
You will need either a second IP address, or you can place a basic business class router on-site and use *one* IP Address and different port numbers (by using port forwarding rules). At Videstra we recommend the latter as it is both less expensive and easy to set up and maintain.

Here is a list of the equipment we recommend for this:

1. Ambry IP-P2 Remote Power Switch (\$115.00)
2. Cisco Small Business RV-340 Router (<\$220.00 at various vendors)

The Ambry unit maintains its own internal web page for control of the dual 110VAC outlets. Videstra has a direct interface to the Ambry outlets for your convenience.

Here is how you place this equipment at the demarc for your remote camera(s):



Notice the recommended port forwarding rules. For security reasons Videstra recommends you do not use default *incoming* ports for the http/ftp/rtsp protocols. We will cover this issue in another article about securing your cameras later, but for now you can assume we simply want to forward *incoming* ports for http, ftp and rtsp to the appropriate pieces of equipment. Using the Cisco RV340 you can do this all on a single IP Address.

This recommendation allows you to perform several critical maintenance functions when things go awry:

1. Reboot the camera
2. Reboot the router and cable/DSL modem (separately)
3. Set up automatic reboot if/when the Internet connection is compromised

The Ambry IP-P2 web page will allow you to toggle the outlet feeding the camera's POE power injector (P1). This will do a full power cycle on the camera and hopefully this will be all you need to do if normal camera resets become unavailable. This, of course, assumes the cable/DSL modem and the Cisco RV240 are still functional. While it's possible they may not be fully functional (or very slow) you still may be able to do a full power cycle on both IP-P2 outlets (P1 & P2) – then reconnect afterwards.

On the other hand – if the cable/DSL modem and/or the Cisco RV240 are non-functional then there is still one pencil left in your pocket protector...

The Ambry can be set to “ping” www.google.com on a regular basis. If it is unable to reach that site, then it will automatically perform a full power cycle on the chosen outlet (P1 and/or P2). As you know there are simply times when a hard reset of a cable/dsl modem, or router are necessary to a full recovery of your Internet connection. For this setting we do not recommend you include the camera in the automatic power-cycle – just the router and modem.

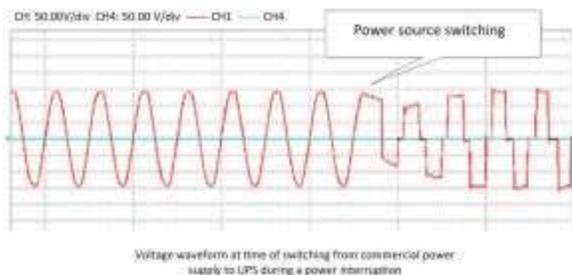
Condition Your Power

Demarcs are often located in areas that are electrically compromised. Sometimes they are in high RF field areas, sometimes they are near elevator or HVAC motors that are capable of throwing spikes and noise into your supply. This kind of RFI or EMI interference can (and often does) wreak havoc with electronics that are not designed to handle this.

A small investment in a power conditioner such as the Furman M-8x2 Merit Series 8 Rack Mount Power Conditioner is well worth the \$95 you will spend on it. There is no need to get fancy here. You can spend anywhere from \$40 to \$500 on a power conditioner. It has been our experience that a well-respected manufacturer such as Furman or Pyle make excellent conditioners for not a lot of money. Please make sure you are not just buying a surge suppressor – make sure it advertises power conditioning (Furman and Pyle units to *both*). If condition is only mentioned in the “headline” but not in the details/description – look elsewhere.

Should I install a UPS?

Sure ... maybe, but if you do, make certain you purchase one that outputs a CLEAN SINE WAVE, not a cheap UPS that typically puts out a 60Hz sloppy square wave. Inexpensive UPS units will often output a very sloppy power signature that looks more like a square wave on a scope than the nice clean sine waves your equipment will prefer. A power conditioner should not be expected to clean this up.



The above image is an actual waveform transition from “clean” power to the power output of a cheap UPS. This is ugly power. The problem with a sloppy square wave is that it also generates spikes AND harmonics that can wreak havoc with your camera, router and cable/DSL modem. If you decide you want a UPS on site, you will likely need to spend \$500 or more for a good one. While we at Videstra CAN recommend a UPS, we do not feel it is a critical element to a reliable setup.

Add an In-Line Ethernet Surge Suppressor

Between the Camera and the POE Power Injector you should install a POE compatible, fully grounded surge suppressor. This can be mounted at the demarc for convenience and easy access to ground (such as commercial conduit or a cold-water ground provided by the building owner). One important element to a properly surge protected ethernet connection is to make sure the Cat5e (or better)



connection from the surge suppressor to the camera is STP (Shielded Twisted Pair) and not simply UTP (Unshielded Twisted Pair). A surge suppressor will not help if that link is not providing a path to ground. You may use UTP cable *after* the surge suppressor as the suppressor itself will provide its own path to ground.

The surge suppressor recommended (and provided by Videstra when you purchase cameras through us) is a Ditek MRJPOES.

Summary

In this article we've presented a few *best practices* for your camera remote location(s). For an investment of < \$500 you will gain considerable reliability and an ability to address issues remotely. At today's wages and time constraints – being able to remotely address issues will be far more economical than having to do a site visit. I would venture to say you will save enough money the *first* time you remotely fix an issue than you have spent on equipment to enable it.