

# SETTING UP UPnP FOR IP NETWORK CAMERAS

*A TUTORIAL V1.00*

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Thank you on behalf of mother nature.



## Revision history

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## Introduction

As the author of IP network camera apps I've been asked more and more often on how to access the camera from outside the local network. The answer is: enabling UPnP on both your router and IP network cameras. Alternatively, instead enabling you can setup port forwarding on your router, but this is more cumbersome. Check our tutorial at:

<http://www.conveniencefactory.com/documents/Setting%20up%20port%20forwarding%20for%20IP%20network%20cameras.pdf>

If your camera doesn't support UPnP you'll need to use port forwarding.

I've written this document out of pure selfishness: I hope spending a few hours writing this down will save me a factor of hours more not spent on support questions. But that doesn't mean this document can't save you some hours of setting up your camera and diagnosing problems, too!

## Terminology

<b>Camera</b>	One of your wired or wireless IP network cameras
<b>Local network</b>	The network your camera or cameras are connected to. If you use the camera at home, this is your home network
<b>Router</b>	The device that connects your local network to the internet
<b>iDevice</b>	Your iPhone/iPod/iPad device where my (or any other) remote camera app is installed on
<b>3G connection</b>	Access to the internet (in this context from an iDevice) through a cellular provider.
<b>Your computer</b>	A device in your local network with a web browser (like a Linux PC, Windows PC, Mac or iPad)
<b>External computer</b>	A device NOT in your local network with an wired internet connection (like a Linux PC, Windows PC or Mac in your office). Preferably not a device using a 3G connection
<b>Internal IP address</b>	The IP-address of a device inside your local network
<b>Public IP address</b>	The external IP-address of your router provided by your internet provider
<b>Web interface</b>	In this context this is the webpage you access to configure or view your camera in a web browser
<b>My app</b>	One of my remote camera apps
<b>Port forwarding</b>	See wiki: <a href="http://en.wikipedia.org/wiki/Port_forwarding">http://en.wikipedia.org/wiki/Port_forwarding</a>
<b>Dynamic DNS</b>	An internet service like dyndns.com to map your dynamic IP address to a fully qualified hostname. See wiki: <a href="http://en.wikipedia.org/wiki/Dynamic_DNS">http://en.wikipedia.org/wiki/Dynamic_DNS</a>
<b>Fully qualified hostname</b>	A hostname pointing to the public IP address of the camera, conforming to a fully qualified domain name <a href="http://en.wikipedia.org/wiki/Fully_qualified_domain_name">http://en.wikipedia.org/wiki/Fully_qualified_domain_name</a>

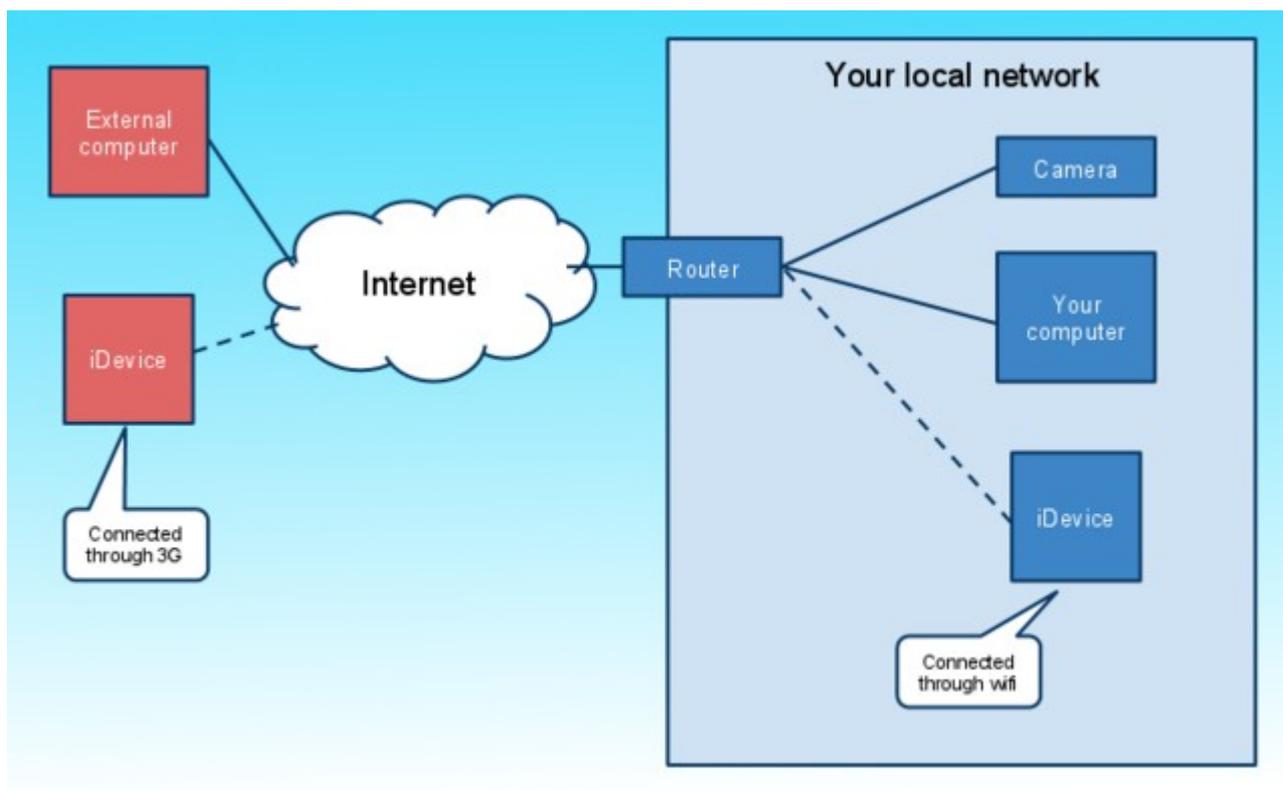


Illustration 1: Network overview

## Prerequisites

- Some network knowledge (you probably already have that if you have your camera up and running). If terms like 'IP address' and 'router' and 'fully qualified hostname' makes you look like a Southpark character blinking his eyes, please ask the neighbor kid to help you.
- An IP network camera supporting UPnP
- A router supporting UPnP
- Local network correctly set up with a working internet connection
- A PC or Mac in your local network
- A PC or Mac outside your local network (eg. from your office)
- Optionally: an iDevice with my (or any other) remote camera app installed.
- Ensure that your camera is working on your local network by accessing the camera's web interface from your computer.

## Gathering information

Before you continue first gather the information below:

- The internal IP address of your camera (this is the IP address you type in your computer's webbrowser to access the webinterface of the camera).
- The internal IP address of your router (this is the IP address you type in your computer's webbrowser to access the webinterface of the router).
- The public IP address of your router. Find it by visiting the website

<http://www.whatsmyip.org/> from your computer's web browser.

## Use small steps

Configure your camera in small steps and validate that it's configured correctly after each of those steps:

1. First ensure that the camera works in your local network by accessing the camera's web interface from your computer (not covered in this article, please refer to your camera's manual for help and your camera's manufacturer for support).
2. Enable port forwarding on your router (see next section) and verify this by accessing the camera's web interface from an external computer.
3. Not until then try a camera app on your iDevice over a 3G connection (optionally)
4. Try setting up dynamic DNS (optionally)

## Enabling UPnP on the router

Access the router's web interface by typing its IP address in the address bar of your favorite browser. Eg:

<http://192.168.1.1/>

Here 192.168.1.1 is the IP address of the router. This differs from camera to camera and on how you have set it up.

Go to the page where there is a option called '*Enable UPnP*', usually this is a checkbox you'll have to check.

## Enabling UPnP on the camera

Access the camera's web interface by typing its IP address in the address bar of your favorite browser. Eg:

<http://192.168.1.23:80/>

Here 192.168.1.23 is the IP address of the camera and 80 is the port number. Again, this differs from camera to camera and on how you have set it up.

Go to the page where there is a option called '*Enable UPnP*', usually this is a checkbox you'll have to check.

If you have multiple cameras in your network **you'll have to set up different ports for each camera:**

On the camera's web interface go to the network settings and provide a different host port. I recommend to use ports 1024 and higher. Eg.

Camera 1: port 1024

Camera 2: port 1025

etc.

## What does it do?

UPnP is like *automatic portforwarding*. Port forwarding, and thus UPnP, enables the camera to be reach from outside your network. In case of UPnP the camera tells the router to open up a certain port. The camera can then be reach through the **public IP address** and the port number configured on the camera.

## Accessing the camera

When you are on your local network, use the internal IP address and port number of the camera to access it. Eg:

<http://192.168.1.1:1024>

Outside your network, use the external IP address and the port number configured in the router to access the camera. Eg:

<http://212.34.12.80:1024>

### IMPORTANT NOTE:

Some, but not all routers also allow you to use the external IP address and port number when you are connected to your local network.