

## Introduction

The following document gives an overview of the “*Webcam in action*” system design. The initial design was conceived as part of the campaign “Webcam In Iraq” that aims to distribute the images of civilians during their daily life in the city of Baghdad.

## Webcam in Iraq

The system aims to distribute the images captured by a webcam world wide while ensuring the scalability and the integrity of the content.

While the design of such system can vary from one scenario to another, this document focuses on a possible technical scenario for sending static or streaming images from a public place in a city of Iraq to the global Internet.

Briefly, a set of four basic requirements of such system has been considered:

1. **Scalability:** Should be scalable as numerous visitors are expected.
2. **Integrity:** Should allow to any visitors to the images to verify that the content has not been manipulated by any party.
3. **Security:** Should prevent from possible denial of service attacks.
4. **Low bandwidth:** Should work with the minimum bandwidth requirements.

In the proposed technical scenario we consider the following actors:

\* **Video camera:** A device that can capture video images and encode them in single frames in digital format. The camera may add to each frame the time and place where the image has been captured. The camera is place in a public place

\* **Camera server:** A personal computer that receives digital images from the video camera and can electronically sign each frame or set of frames (integrity). The camera server is also responsible of uploading the signed images to an intermediate server (namely secure forwarder).

\* **Secure forwarder:** A machine between the camera server and the broadcast servers. The secure forwarder is responsible of protecting the camera server and filters any possible attack from any malicious Broadcaster or any other third party.

\* **Broadcasters:** A set of dedicated computers attached to high capacity Internet links. The broadcasters are responsible of downloading the images placed in the

secure forwarder. The broadcasters accept any connection from any second level broadcasters or individual visitors.

\* **Visitors:** The final users that connect to the Broadcasters.

**Notes:**

- Each of the official broadcasters (xxx) is registered under a well known domain name. e.g. xxx.webcamiraq.org
- The secure forwarder will only accept connections from the set of Internet addresses of the official broadcasters
- Information concerning the webcam broadcasters and the data necessary to verify the integrity of the images is posted on [www.webcamiraq.org](http://www.webcamiraq.org) website.

N.B. The existence of multiple independent broadcasters provides scalability while the digital signature ensures that the images can not be manipulated on the transit.

**Technical requirements**

- **In the city XXX**

- (Camera) An outdoor web camera server
- (Camera Server) A computer capable of uploading images to “secure forwarder”

- **In the country**

- (Secure forwarder) A computer capable of both reaching the Camera Server via a public or private network and is also reachable via the public Internet.

- **Outside of XXX**

- (Campaign Web Site) A web server that host the main domain of the campaign and the domain name server that points to the official broadcasters. The web server also includes the information to verify the digital signature of the images.
- (Broadcasters) A set of computers that want to be the official broadcasters.