

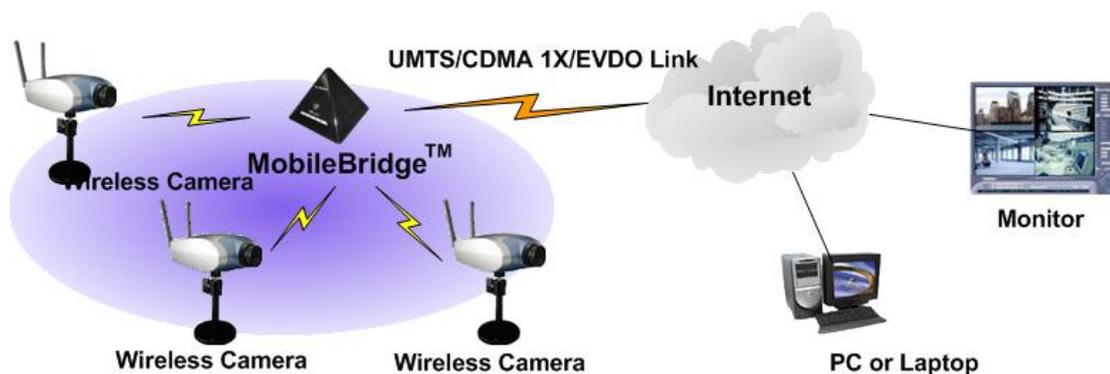
Remote Wireless Surveillance Solution

Top Global offers an easy to use, plug and play wireless surveillance solution for construction sites and remote locations/buildings monitoring. The solution could support multiple cameras and consists of WiFi cameras, MB6000 and 3G data card. This wireless surveillance total solution can be pre-configured in advance. The end user just needs to supply power for these devices at the field without the need of any network cable, the site can be monitored instantaneously and viewable from anywhere using a web browser on internet.

I set up a total wireless surveillance system in my office using the following devices:

1. WiFi cameras
2. Top Global MB6000
3. a 3G data card

The network topology is as below:



Top Global M6000 has 2 wireless interfaces: one embedded WLAN interface and one PCMCIA slot with data card plugged in as WWAN interface. Setting right WLAN parameters (SSID, WEP...) in the WiFi camera, WiFi camera can be easily connected with MB6000. The data card is inserted into the PCMCIA slot of MB6000. MB6000 uses this data card to dial into the Mobile Operator's network and connects those WiFi cameras into internet.

There is a NAT in Top Global MB6000. From the internet, I can't visit the cameras within the private LAN of MB6000. Fortunately MB6000 supports the IP port forwarding function. With this function, I can forward the TCP or UDP request coming from internet to the cameras within the private LAN of MB6000.

The WiFi camera supports the HTTP and Streaming video and audio. You can use IE to brows the video by inputting the camera IP address directly into the address bar. I set the WiFi camera with the following parameters:

Configuration

> Network

- HOME
- System
- Security
- Network
- DDNS & UPnP
- Mail & FTP
- Video
- Motion detection
- Application
- Homepage layout
- View log file
- View parameters
- Factory default

version : 0201b

Reset the IP address at next boot

General

IP address	172.16.0.3
Subnet mask	255.255.255.0
Default router	172.16.0.1
Primary DNS	66.174.6.7
Secondary DNS	66.174.3.7

HTTP

HTTP port	80
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Streaming

Control channel port	5001
Audio channel port	5002
Video channel port	5003

Improve audio quality in low bandwidth environment

Mute

WLAN Configuration

SSID	Topglobal-070028
Wireless mode	Infrastructure
Channel	3

Configuration

- HOME
- System
- Security
- Network
- DDNS & UPnP
- Mail & FTP
- Video
- Motion detection
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- View parameters
- Factory default

version : 0201b

Reset the IP address at next boot

General

IP address	172.16.0.4
Subnet mask	255.255.0.0
Default router	172.16.0.1
Primary DNS	66.174.6.7
Secondary DNS	66.174.3.7

HTTP

HTTP port	80
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Streaming

Control channel port	50011
Audio channel port	50012
Video channel port	50013

Improve audio quality in low bandwidth environment

Mute

WLAN Configuration

SSID	Topglobal-070028
Wireless mode	Infrastructure
Channel	3
TX rate	auto
Preamble	Long preamble

The key parameters are IP address and WLAN configuration. I assign 172.16.0.3/255.255.0.0 and 172.16.0.4/255.255.0.0 to the two cameras. And set the default router to the IP address of

MB6000. I assign the SSID to “Topglobal-070028” which is also set in the WLAN configuration of MB6000. Pay attention to the Http port and streaming ports of the cameras; we will map those ports to MB6000 ports one by one.

In the configuration of MB6000, press Add button to set the TCP and UDP map table in the Web GUI of MB6000 as below: Firewall->Port Forwarding

Firewall: Port Forwarding

Apply Change

Interface	Protocol	Ext. port	NAT ip	Int. port	Enable	Configure
<input type="button" value="Add"/> <input type="button" value="Defaults"/>						



Note:

Function Summary

This feature allows you to forward incoming traffic on certain ports in order to access servers behind the NAT. This feature can let you setup a web server, mail server, FTP server, DNS, etc on your LAN so it can be accessed from the Internet. The description of each item is as below:

Enable Checkbox: You can enable or disable a port forwarding item by check or uncheck this checkbox;

Move up, Move down: Re-arrange the order of each item in the list;

Apply Change: Click the **Apply Change** button to validate the change immediately. No reboot is needed here;

Add: Click the **Add** button, a pop up window for inputting port forwarding item will appear:

A window is pop out and I add the ports map as below:

Firewall: Port Forwarding

Interface	WAN	Choose which interface this rule applies to. Hint: in most cases, you'll want to use WAN here.
Protocol	TCP/UDP	Choose which IP protocol this rule should match. Hint: in most cases, you should specify <i>TCP</i> here.
External port	(other) 50009	Specify the port on the firewall's external address for this mapping.
NAT IP	172.16.0.3	Enter the internal IP address of the server on which you want to map the ports. e.g. <i>172.16.0.3</i>
Local port	HTTP 80	Specify the port on the machine with the IP address entered above.
Auto forward	Enable	Hint: specify if auto add one access rule for allow this packet to forward .
Description		You may enter a description here for your reference (not parsed).



Note:

Each item is consisted of the following parameters:

Interface: This parameter indicates which interface of MB6000 will implement this port forwarding rule. In most cases the interface should be WAN;

Protocol: This parameter indicates which protocol will implement this port forwarding rule. Possible protocols are: TCP, UDP, TCP/UDP;

External port: This parameter indicates the port for public access;

NAP IP: This parameter indicates the IP address of the internal host which wants to provide service for the outside.

Local port: This parameter indicates the port of internal service;

Auto forward: This parameter will be Enable always, which means MB6000 will enable this forward automatically;

Description (optional): Type your comments for this rule here.

With the configuration shown in the picture, I mapped the WiFi camera: 172.16.0.3 port 80 to the port 50009 of MB6000 WAN interface. Then press Submit button to submit this configuration.

After finished submitting all the items, I press the Apply Change button to make all the configurations valid.

Firewall: Port Forwarding

 The firewall port forwarding rule configuration has been changed. You must apply the changes in order for them to take effect.

Apply Change

Interface	Protocol	Ext. port	NAT ip	Int. port	Enable	Configure
WAN	TCP/UDP	50009	172.16.0.3	HTTP	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	5001	172.16.0.3	5001	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	5002	172.16.0.3	5002	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	5003	172.16.0.3	5003	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	50008	172.16.0.4	HTTP	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	50011	172.16.0.4	50011	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	50012	172.16.0.4	50012	<input checked="" type="checkbox"/>	   
WAN	TCP/UDP	50013	172.16.0.4	50013	<input checked="" type="checkbox"/>	   

Add **Defaults**

Pay attention that I map the 80 port of 172.16.0.3 into the port 50009 of MB6000 and 80 port of 172.16.0.4 into the port 50008 of MB6000. Also you can notice that we assign different ports of MB6000 for each streaming ports of the cameras. I map both TCP and UTP ports of the cameras so that we can get better performance in bad network environment.

After the upper configurations, I reboot MB6000 and the camera so that the configuration will take effect. After the MB6000 rebooting and dialing up, I check the MB6000 GUI to see it gets an IP address as: 70.219.244.97. Then I can use <http://70.219.244.97:50009/> and <http://70.219.244.97:50008/> to brows the video in the two cameras.

This system is totally wireless! It can be set up easily and rapidly. You can even DIY make a surveillance monitor for your office with little cost and effort! Placing this in your car with power supplied from your car, you can drive this mobile wireless surveillance system to anywhere where you want to monitor.

It is a truly mobile and portable wireless surveillance solution for homeland security, disaster monitoring, telemedicine, construction site monitoring, as well as logistics/warehouse monitoring.



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