



1 Purpose

Should any local device need internet service to send an email, perform a “put” FTP or any other action, eWON connects “on demand” to the local Internet service provider and forwards the request. With its embedded firewall and NAT server keeping local IP addresses undisclosed, eWON offers efficient protection against hackers.

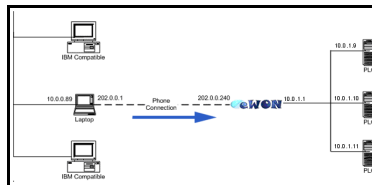


If you need to gain access to IP devices remotely ?

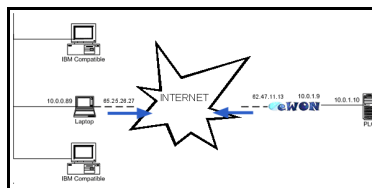
This document will help you to setup the 3 mains remote network topologies you could use.

These 3 topologies are:

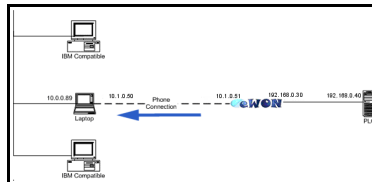
- Direct phone connection



- Callback through Internet



- Callback directly to you





2 Definitions

What is IP routing ?

IP routing is the way of reaching devices not belonging to your local network (subnet).

IP address, subnet mask and Gateway ?

The *IP address* of your device (PC or PLC) is an unique 32 bits number used to find your device on a TCP/IP network. This address is represented as four 8 bits number separated by period.

Example: 10.0.0.89

The *subnet mask* is a pattern defining the range of addresses belonging to your subnet.

The *Gateway* is a specialised device making the connection between 2 distinct subnets.

3 Dial On-Demand

Your remote IP Devices need to send an email, or perform a file transfer by FTP, then they need to connect to Internet.

With built-in modem of eWON, your Devices can use eWON to handle all Internet connection parameters.

From the IP Devices point of view, the eWON is a classic ROUTER.



Figure 1: Dial on demand

Step 1: Configure your IP Devices

Your IP Devices placed behind the eWON must have the eWON as gateway.

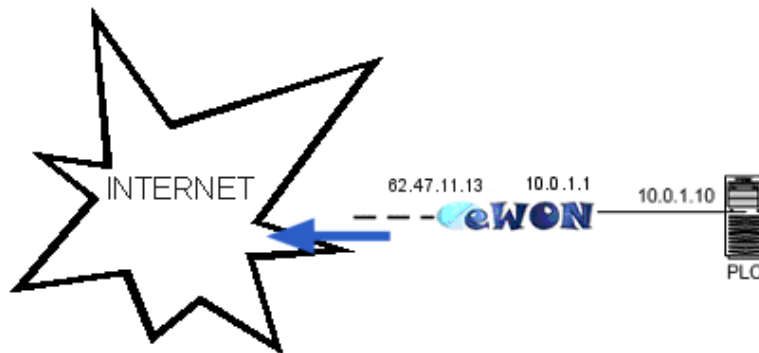


Figure 2: IP addresses

For example, on Figure 2, the eWON has the IP address 10.0.1.1, then, all IP Devices must configure their gateway address with this IP address.

The IP parameters of the eWON will be:	The IP parameters of the PLC will be:
<p>IP address : 10.0.1.1 Subnet mask : 255.255.255.0 Gateway : 0.0.0.0</p>	<p>IP address : 10.0.1.10 Subnet mask : 255.255.255.0 Gateway : 10.0.1.1</p>



Step 2: Configure the eWON DialUp

Go on Dial up configuration page with eWON menu *Configuration-System Setup-Communication-Dial Up(PPP)* and Allow the Outgoing connection.

DIAL UP CONFIGURATION	
Global Dialup Config	
Call direction allowed	Outgoing only
Use incoming for outgoing	<input type="checkbox"/> Use connected client connection (if any) for outgoing operations

In the Outgoing configuration, fill the **Primary Server** with your ISP (Internet Service Provider) parameters.

Outgoing Calls Config	direction allowed must be 'Outgoing' or 'Both'
Dial-out timeout	120 seconds
Idle time before hanging up	60 seconds (min. 60 sec.)
Delay between dialout retry	60 secondes
Max outgoing call duration	60 minutes (0 for no limit)
Hang up if no outgoing action after	0 minutes (if -1 hangup occurs after "idle time")
Enable compression	<input checked="" type="checkbox"/>
Require secure authentication (CHAP)	<input checked="" type="checkbox"/> (otherwise allow PAP - send your password as clear text)
Primary Server	
Server Phone Number	123456789 (Or phone number = GPRS)
User Name	MyUserName
Password	••••••
Secondary Server	
Leave blank if not defined	
Server Phone Number	(Or phone number = GPRS)
User Name	
Password	

Figure 3: Outgoing calls config

To make sure that eWON don't stay connected longer than necessary, set the **Hang up if no outgoing action after** to 0. It will instruct the eWON to close the connection immediately after the outgoing action (SendMail, putFTP,...).

You can let the other parameters to their default value.



Step 3: Configure the eWON as Router

Go on the Router configuration page with eWON menu *Configuration-System Setup-Communication-Router (filter)* and check the IP Forwarding, NAT and Transparent Forwarding checkboxes.

If you need to restrict to Internet access, you can specify IP addresses range allowed or disallowed for Internet connection.

ROUTER CONFIGURATION	
Ip Forwarding	
Enable IP forwarding	<input checked="" type="checkbox"/> Allow data to travel between Ethernet and PPP [1]
Enable NAT	<input checked="" type="checkbox"/> (IP forwarding is required for NAT) [2]
Enable Transparent Forwarding (TF)	<input checked="" type="checkbox"/> Connect to a LAN device using eWON (PPP) IP address. [2]
Security	
Authenticated routing	<input checked="" type="checkbox"/> Accept PPP packets only from authenticated user (for TF). [2]
Dial On Demand [2]	
<input type="radio"/> Accept dial on demand from NO ONE EXCEPT from: <input checked="" type="radio"/> Accept dial on demand from ANYONE EXCEPT from:	
IP Range	From: <input type="text" value="0.0.0.0"/> To: <input type="text" value="0.0.0.0"/>
IP Range	From: <input type="text" value="0.0.0.0"/> To: <input type="text" value="0.0.0.0"/>
IP Range	From: <input type="text" value="0.0.0.0"/> To: <input type="text" value="0.0.0.0"/>
IP Range	From: <input type="text" value="0.0.0.0"/> To: <input type="text" value="0.0.0.0"/>
[1] Updated only when eWON boots. [2] Updated every new PPP connection.	
NAT and Transparent Forwarding are only used for outgoing connections.	

Update Router Setup

Now, each IP packets transmitted on the network can be forwarded on Internet by the eWON.

4 Direct phone connection

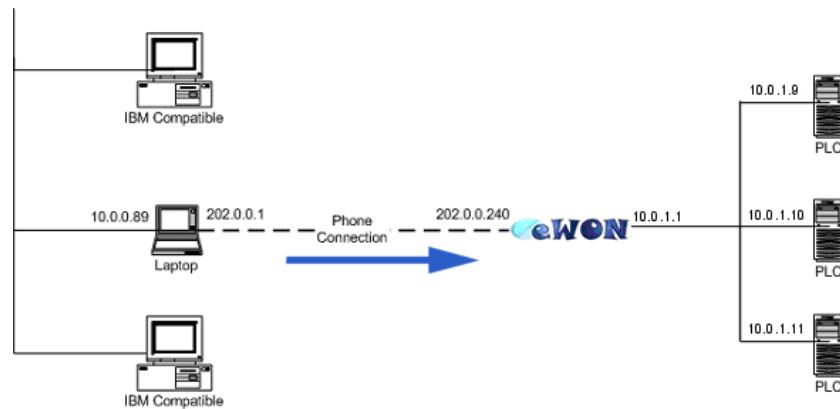


Figure 4: Direct phone connection

This is the classic way to access to remote devices.

4.1 configure your eWON

Step 1: Enable the incoming phone connection

Go on Dial up configuration page with eWON menu *Configuration-System Setup-Communication-Dial Up(PPP)* and Allow the Incoming connection (see below)

DIAL UP CONFIGURATION	
Global Dialup Config	
Call direction allowed	Incoming only
Use incoming for outgoing	<input type="checkbox"/> Use connected client connection (if any) for outgoing operations
Incoming Calls Config	direction allowed must be 'Incoming' or 'Both'
Idle time before hanging up	240 seconds (min. 60 sec.)
Enable compression	<input checked="" type="checkbox"/>
eWON PPP server IP address	202.0.0.240
eWON PPP server IP mask	255.255.255.0
eWON PPP server gateway	0.0.0.0
PPP client allocated IP address	202.0.0.1

Figure 5: Dial Up setup page (incoming calls)

The other parameters can stay with their default values. See Reference Guide (1)

Step 2: Activate the IP forwarding

Go on the Router configuration page with eWON menu *Configuration-System Setup-Communication-Router (filter)* and check the IP Forwarding checkbox (see below).

ROUTER CONFIGURATION	
Ip Forwarding	
Enable IP forwarding	<input checked="" type="checkbox"/> Allow data to travel between Ethernet and PPP [1]
Enable NAT	<input type="checkbox"/> (IP forwarding is required for NAT) [2]
Enable Transparent Forwarding (TF)	<input type="checkbox"/> Connect to a LAN device using eWON (PPP) IP address. [2]

The NAT and Transparent Forwarding are useless in this type of connection.

4.2 Configure your IP Devices

Your IP Devices placed behind the eWON must have the eWON as gateway.

In the Figure 4, all Devices must configure their gateway address with the 10.0.1.1 (eWON IP address).

Now, from your computer, you can dial the eWON phone number and go remotely on the eWON website with the IP address <http://202.0.0.240> (default eWON PPP server address, see Figure 5).

eWON will act exactly as an ISP (Internet Service Provider) and will forward all IP packets not addressed to it. For example, in the Figure 4, you just need to encode <http://10.0.1.10> in your Internet browser to go on the second PLC.

5 Internet Callback connection

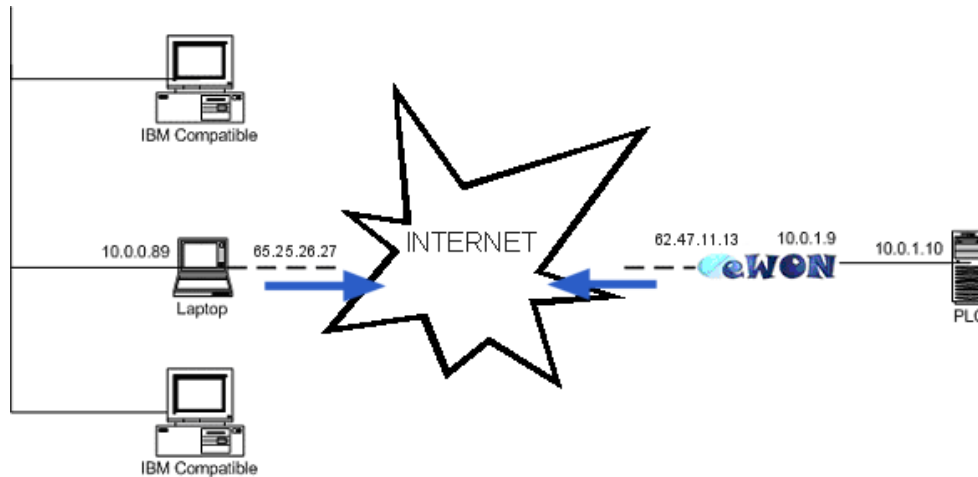


Figure 6: Internet Callback connection

Principle:

Internet Callback is triggering the eWON to force it to connect itself on Internet. This trigger is either a number of ring or a User request.

Once connected, eWON send you an eMail with its new Internet IP address (in Figure 6, at 62.47.11.13).

At this moment, this eWON is **on Internet**, then reachable by the entire world. For you, it means that you could reach your PLC from any place on the world, but anybody can do the same, then this configuration is potentially unsafe.

For the moment, only the eWON is reachable on Internet, you cannot use it as a classic Router. You need to use the Transparent Forwarding feature of eWON. This feature configures the eWON to forward all IP packets received from the Internet (modem) connection to **one** IP device behind it.

Once transparent forwarding activated, you need a way to stop it. It can be done by using the HTTP port 81 that will always go on the eWON website.

In our example, introduce in your Internet browser the following address: <http://62.47.11.13:81>



5.1 Configure your eWON

Step 1: Dial up (PPP)

Set the eWON to accept **Incoming & Outgoing** connections.

DIAL UP CONFIGURATION	
Global Dialup Config	
Call direction allowed	Incoming & Outgoing
Use incoming for outgoing	<input type="checkbox"/> Use connected client connection (if any) for outgoing operations

Set the Primary Server to your ISP (see Figure 3: Outgoing calls config on page 4)

Step 2: Activate the IP Forwarding

ROUTER CONFIGURATION	
Ip Forwarding	
Enable IP forwarding	<input checked="" type="checkbox"/> Allow data to travel between Ethernet and PPP [1]
Enable NAT	<input checked="" type="checkbox"/> (IP forwarding is required for NAT) [2]
Enable Transparent Forwarding (TF)	<input checked="" type="checkbox"/> Connect to a LAN device using eWON (PPP) IP address. [2]

Step 3: Activate Callback

Go on the Callback configuration page with eWON menu *Configuration-System Setup-Communication-Callback* and set parameters as follow.

CALLBACK CONFIGURATION	
General Callback Config	
Callback Enabled	<input checked="" type="checkbox"/> ('Outgoing' calls must be enabled in Dialup configuration)
Callback delay	15 seconds
Wait for user login for	1200 seconds
Dialup account	Primary dialup server (User callback is valid only if 'On User's request mode is selected')
Select one callback method: RING or USER'S REQUEST	
Callback on RING	<input checked="" type="radio"/> Callback occurs when RING is detected
Number of RINGS	5 (minimum 2)
Plus number of RINGS then On Hook	10 (minimum 5)
Callback on USER'S REQUEST	<input type="radio"/> User must log on and request callback
IP address publishing	
Publish IP address EMail	me@company.com (Empty means no address publishing by Email)



With these settings, you must call by phone the eWON, wait more than 5 rings, hang up and after 15 seconds, the eWON will connect to Internet and send its new IP address to me@company.com.

Once you have reach the eWON on Internet, log on and you'll find the following screen that allow you to configure the Transparent Forwarding destination.

Transparent Forwarding		
Connect To:	<input type="text" value="0.0.0.0"/>	<input type="button" value="Connect"/>
<input type="button" value="Clear transp. forwarding"/>		

Set the IP address of the Device you want to reach and all IP packets received by eWON (by modem) will forwarded to the wanted destination.

To stop the Transparent Forwarding, go on the HTTP port 81. (eWON website), and use the *Clear transp. Forwarding* button.

5.2 Configure your IP Devices

Your IP Devices placed behind the eWON must have the eWON has gateway.

In the Figure 6, all Devices must configure their gateway address with the 10.0.1.9 (eWON IP address).

Now, you are ready to get access on an eWON placed at the other side of the world by the use of two local phone calls.

6 Callback directly to you

Can be also a Dial On Demand directly to you.

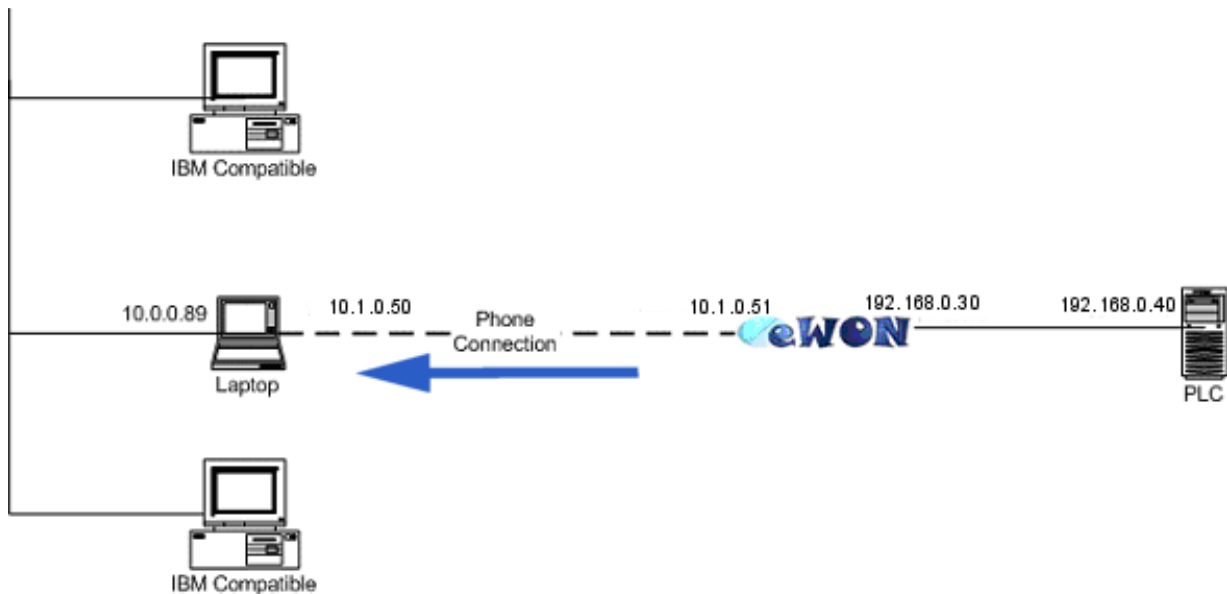


Figure 7: Callback directly to you

The only difference between this config and the Callback to Internet, it's that eWON call directly you and not an ISP.

For that, you computer must be configured to accept incoming connection (see Windows Network connections).

eWON configuration is exactly the same as in Internet Callback except that your computer plays the role of ISP.

Once the link is established between the eWON and your PC, the eWON have a direct access to you BUT you don't have immediate access to eWON because no IP ROUTE is set automatically by Windows on incoming connection. Then you need to add manually this route with the DOS command "ROUTE ADD".

For the topology of the Figure 7, the DOS command will be like that:

```
ROUTE ADD 192.168.0.0 MASK 255.255.255.0 10.1.0.51 IF 0x10003
```

Pay attention to choose the right interface (IF), you must select the WAN (PPP/SLIP) Interface.

```
C:\Documents and Settings\prk>route print
=====
Interface List
0x1 ..... MS TCP Loopback interface
0x2 ...00 08 74 f3 9f cd ..... Intel(R) PRO/1000 MT Network Connection - Packet Scheduler Miniport
0x10003 ...00 53 45 00 00 00 ..... WAN (PPP/SLIP) Interface
=====
```



7 References

- (1) eWON reference guide : http://www.ewon.biz/rev4/eWON_UG_4_3_3_UK.pdf