Customer Internet access – requirements and verification methods for Network Extender Femtocell

Contents

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Introduction

The main purpose of this document is to identify the pre-requirements for your Internet access so that the Femtocell (Network Extender) can connect to the ORANGE network.

This document covers the technical pre-requisites and provides a way to verify each of them on your Internet access.

If all results are positive, we should be able to install and connect the Femtocell on this Internet line. Keep in mind, however, that if any of these parameters change after your test (for example, bandwidth availability if your Internet line is shared with other activities, or changes to your firewall), this can affect the Femtocell connection.

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Technical requirements for Internet access

Your Internet access solution must allow the Femtocell to get an IP address from a local DHCP server and access the Internet, and then allow the communication with Orange equipment (SecGW and NTP) using the different protocols and ports.

You can find the detailed list of requirements for your Internet access below:

1. The DHCP and DNS servers must be active *See below how to test this*
    Note: The Femtocell 's IP address must be assigned by the DHCP server and this Ip address can be a fixed IP address on DHCP (MAC address of the Femtocell must be configured in the DHCP server)

2. Your Internet access must have an always-available bandwidth of at least 2 Mbps upload and 2 Mbps download. *See below how to test this*
    Note: if you want to optimally benefit from the 4G network provided by the Femtocell to run data sessions, a bandwidth as from 20 Mbps download and 10 Mbps upload is strongly recommended.

3. If a firewall exists between the Femtocell and Internet, it must allow traffic on the following protocols and ports between the Femtocell and the Orange network. (*See below how to test this*)

Protocol	Destination port	Transport Protocol
DHCP	67	UDP
DNS	53	UDP
IKE	500	UDP
IKE/ESP	4500	UDP
NTP	123	UDP
Traceroute	33434 - 33444	UDP

4. The Femtocell can be connected behind a NAT firewall, but not behind a proxy.

5. The electrical power for the Femtocell can be provided via a standard 220 V power socket. If no power socket is available, the installer will install a PoE (Power over Ethernet) device to send the needed power via the Ethernet cable.

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How to verify the requirements

<u>IMPORTANT:</u>

For all the tests below, connect the PC or laptop to the Internet via the cable (RJ-45) on the port that will be used to connect the Femtocell.

Please run the tests described here anyway to ensure that the Femtocell will be able to connect without problems.

Test of DNS and DHCP server

<u>Method:</u>

1.   First, make sure your PC is connected to the Internet via a cable (RJ-45) on the port that will be used to connect the Femtocell
2.   Click on the Windows button (start menu) -> in the search bar, type "cmd.exe" then press "ENTER"
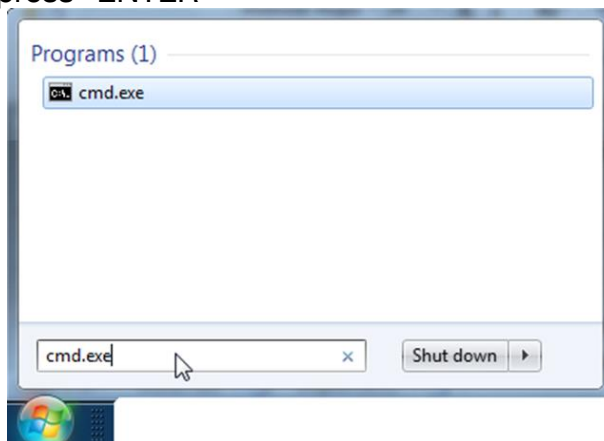
3.   In the black window type "ipconfig /all" then press "ENTER"

<u>Expected result:</u>

You need to verify the CMD output window, to check for the existence of DNS server and DHCP server lines, whose addresses must be different from 0.0.0.0 (see yellow arrows here below)
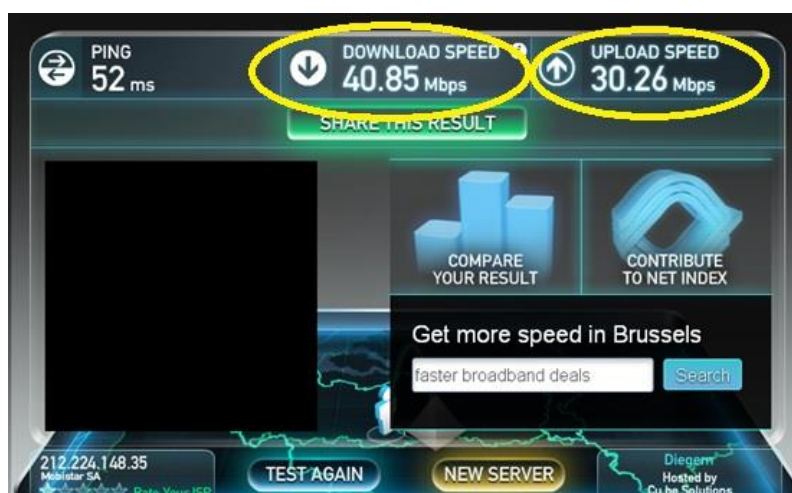
Speed test

<u>Method:</u>

1. First, make sure your PC is connected to the Internet via the cable (RJ-45) on the port that will be used to connect the Femtocell.
2. Go to the URL: http://Orange.speedtest.net/
3. Just click on "begin test (recommended server)"

4. Run the bandwidth test at least 3 times, preferably at different moments of the same day to get an average

<u>Expected results:</u>

Both "upload speed" and "download speed" should at least be 2 Mbps and ideally above 20Mbps download/10Mpbs upload.

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Testing the ports

<u>Method:</u>

1. First, make sure your PC is connected to the Internet via a cable (RJ-45) on the port that will be used to connect the Femtocell
2. Go to https://business.orange.be/sites/default/files/femto.zip
3. Download the zipfile and install it on your pc
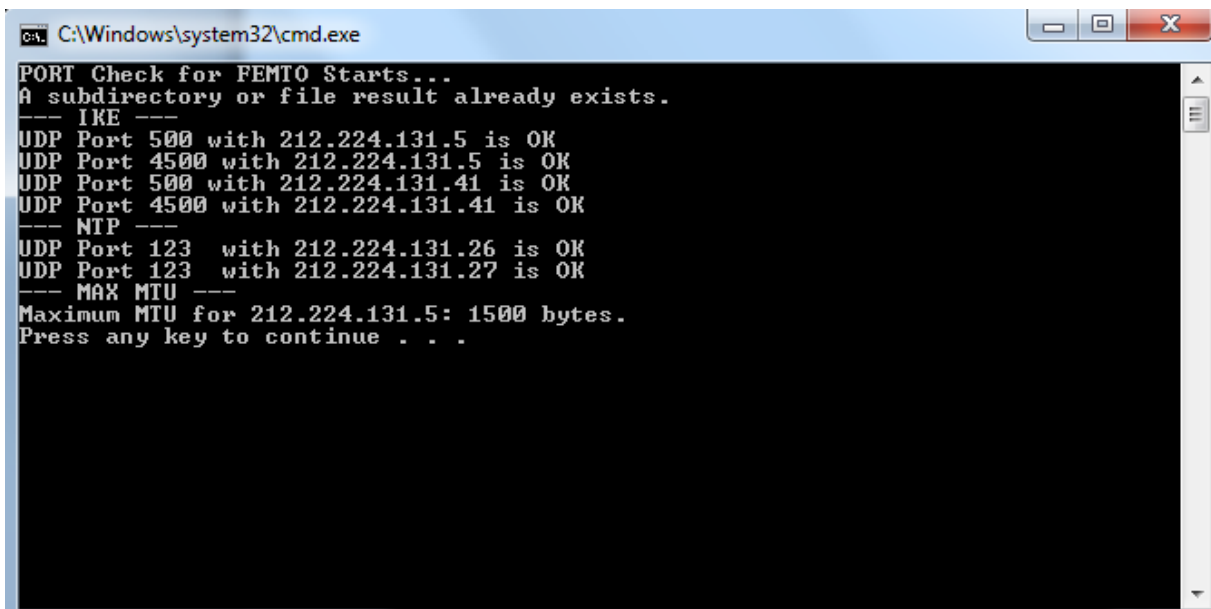
Name	Date modified	Type	Size
ike	12/03/2018 16:07	File folder	
result	12/03/2018 16:07	File folder	
Porttest	12/03/2018 14:24	Windows Batch File	6 KB

4. Run the "Porttest" application
5. Open result folder and open the text file

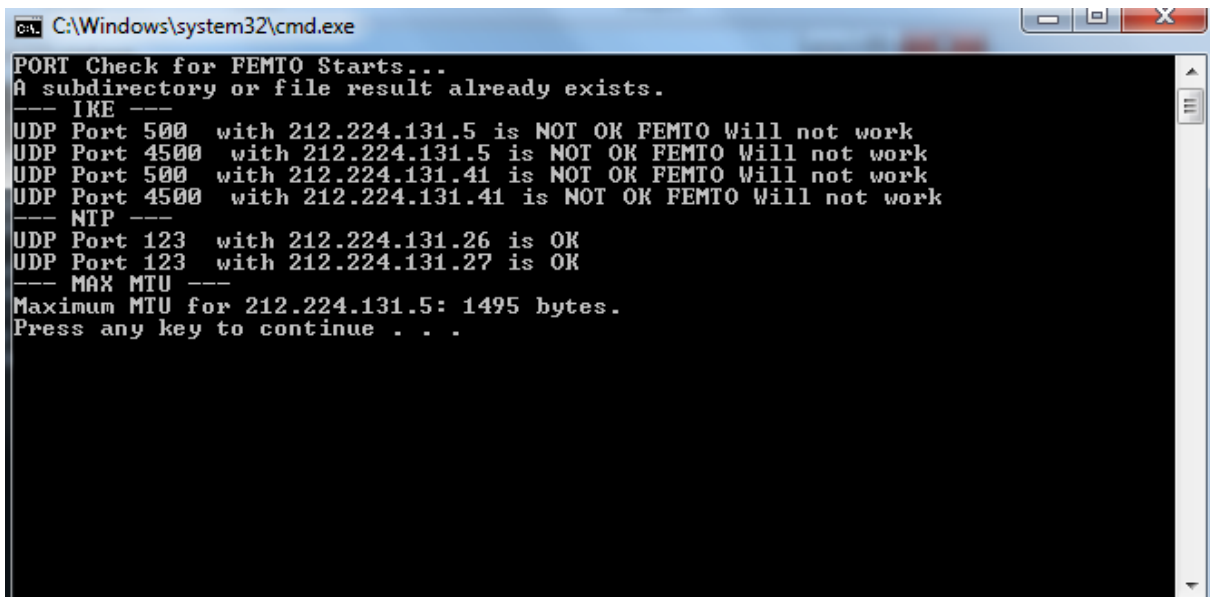| Name	Date modified	Type	Size
Porttest_20181203_160712	12/03/2018 16:07	Text Document	1 KB

<u>Successful result:</u>

You must see is "ok" for all listed ports

```
C:\Windows\system32\cmd.exe

PORT Check for FEMTO Starts...
A subdirectory or file result already exists.
--- IKE ---
UDP Port 500 with 212.224.131.5 is OK
UDP Port 4500 with 212.224.131.5 is OK
UDP Port 500 with 212.224.131.41 is OK
UDP Port 4500 with 212.224.131.41 is OK
--- NTP ---
UDP Port 123  with 212.224.131.26 is OK
UDP Port 123  with 212.224.131.27 is OK
--- MAX MTU ---
Maximum MTU for 212.224.131.5: 1500 bytes.
Press any key to continue . . .
```

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Unsuccessful result:

Any other results indicate that you will need to modify your firewall/Internet connection settings in order to open that specific port.


```
C:\Windows\system32\cmd.exe

PORT Check for FEMTO Starts...
A subdirectory or file result already exists.
--- IKE ---
UDP Port 500   with 212.224.131.5 is NOT OK FEMTO Will not work
UDP Port 4500  with 212.224.131.5 is NOT OK FEMTO Will not work
UDP Port 500   with 212.224.131.41 is NOT OK FEMTO Will not work
UDP Port 4500  with 212.224.131.41 is NOT OK FEMTO Will not work
--- NTP ---
UDP Port 123   with 212.224.131.26 is OK
UDP Port 123   with 212.224.131.27 is OK
--- MAX MTU ---
Maximum MTU for 212.224.131.5: 1495 bytes.
Press any key to continue . . .
```

Please re-run the test afterwards to verify that the results are correct.