

The M2M Cook Book

Remote access using OpenVPN

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Ralf Fachtet

LET'S COOK A M2M MENU IN 5 STEPS AND 10 MINUTES



The ingredients

PLC



3G Router



Internet



OpenVPN Server



computer



3G Mobile
Network



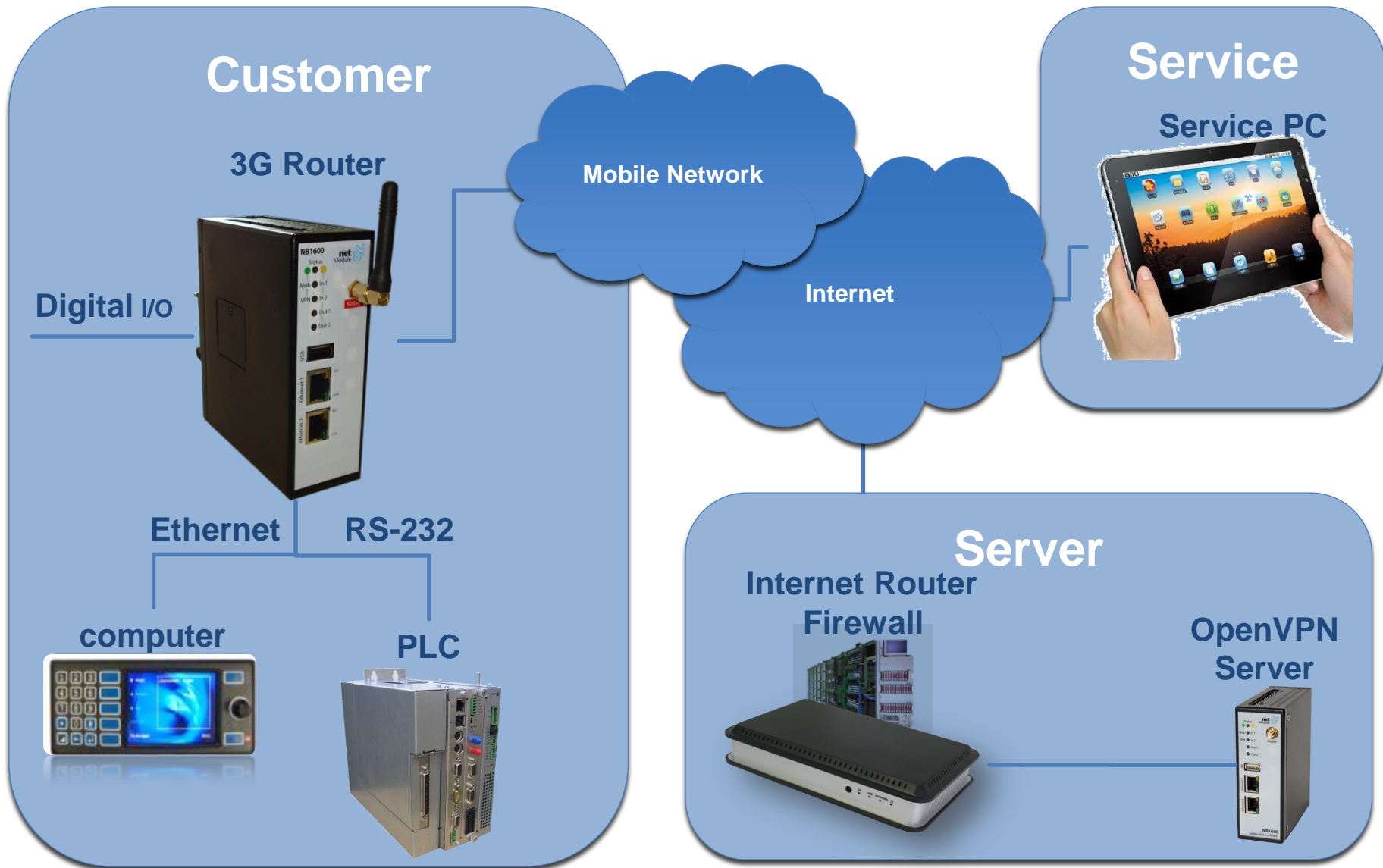
Internet Router / Firewall



Service PC

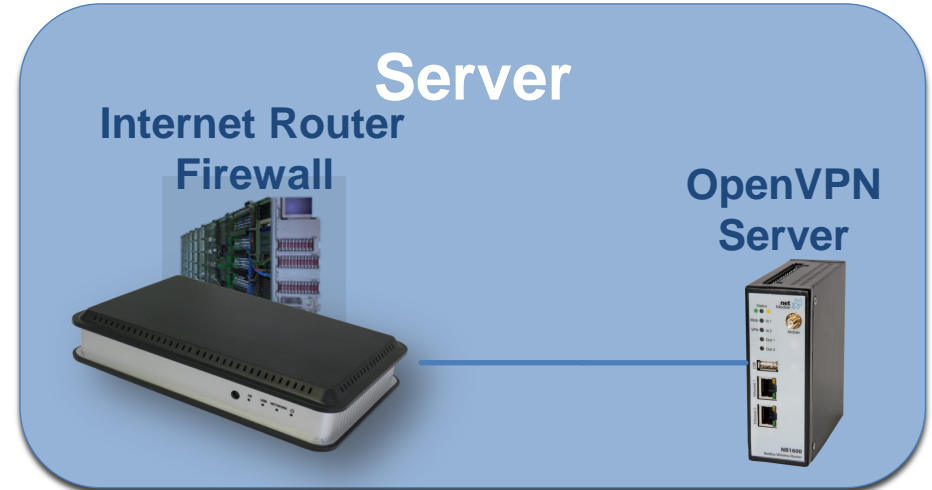


The arrangement is key



Step 1: Setting up the server

- Public IP needed
 - Fixed
 - DynDNS
- Connect OpenVPN server
 - Using WAN Port
 - DHCP client or fixed IP
 - DMZ or local lan
- Open one port in the firewall
 - Standard UDP 1194
 - Sometimes TCP 80



Step 2a: Configure the server

OpenVPN

[Administration](#)
[Tunnel Configuration](#)

IPsec

[Administration](#)
[Configuration](#)

PPTP Server

Dial-in Server

Tunnel 1

Tunnel 2

Tunnel 3

Tunnel 4

Tunnel 1 Configuration

Operation mode: disabled client standard expert
 server

Server port:

Type:

Network mode: routed bridged

Cipher:

Use compression:

Use keepalive:

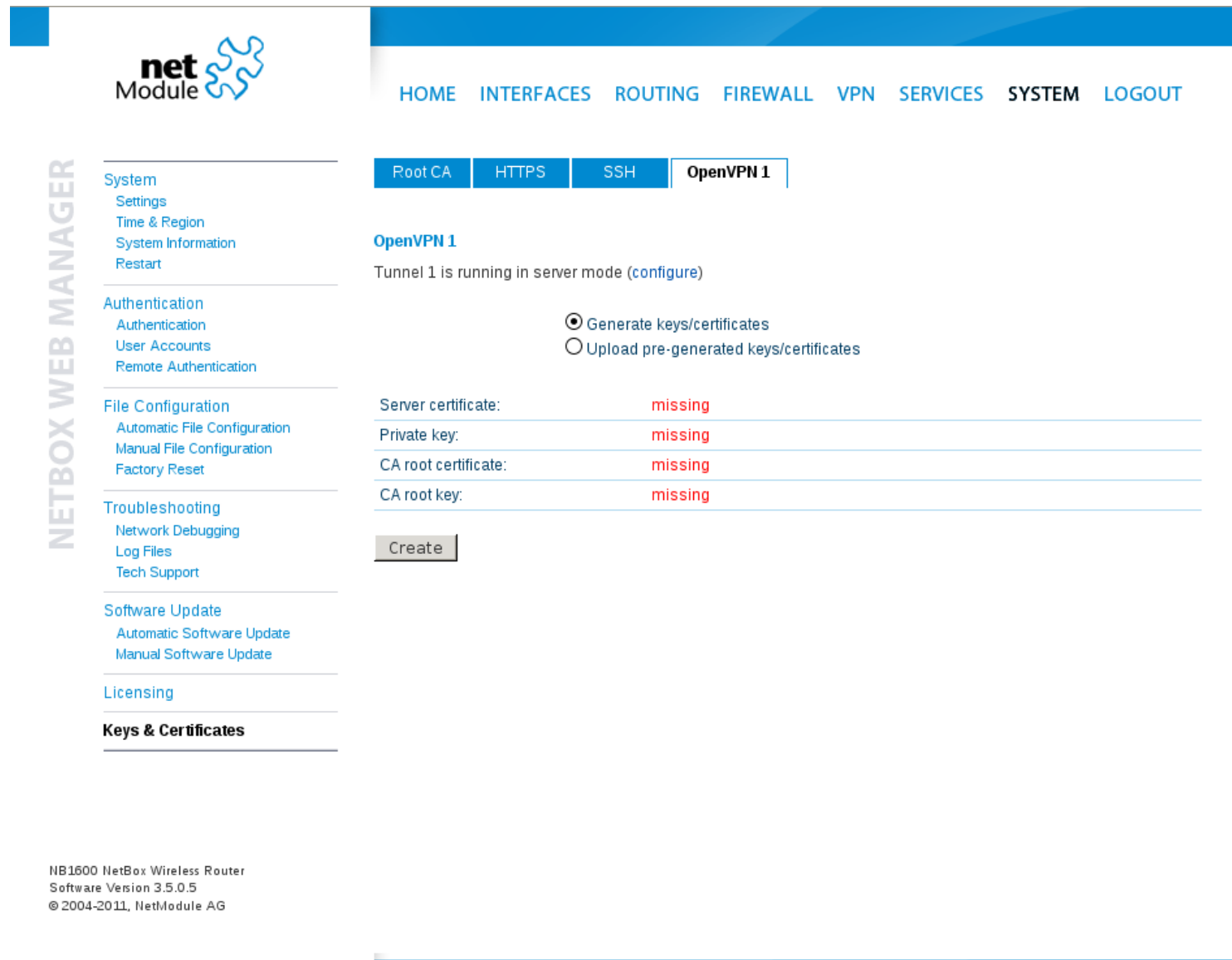
Redirect gateway:


Protocol:

Authentication: certificate-based

Apply

Step 2b: Generate keys and certificates



net
Module 

NETBOX WEB MANAGER

HOME INTERFACES ROUTING FIREWALL VPN SERVICES SYSTEM LOGOUT

Root CA HTTPS SSH **OpenVPN 1**

OpenVPN 1

Tunnel 1 is running in server mode ([configure](#))

Generate keys/certificates
 Upload pre-generated keys/certificates

Server certificate: **missing**

Private key: **missing**

CA root certificate: **missing**

CA root key: **missing**

[Create](#)

System
[Settings](#)
[Time & Region](#)
[System Information](#)
[Restart](#)

Authentication
[Authentication](#)
[User Accounts](#)
[Remote Authentication](#)

File Configuration
[Automatic File Configuration](#)
[Manual File Configuration](#)
[Factory Reset](#)

Troubleshooting
[Network Debugging](#)
[Log Files](#)
[Tech Support](#)

Software Update
[Automatic Software Update](#)
[Manual Software Update](#)

Licensing

Keys & Certificates

NB1600 NetBox Wireless Router
Software Version 3.5.0.5
© 2004-2011, NetModule AG

Step 2c: Generate client configuration

OpenVPN

- Administration
- Tunnel Configuration
- Client Management

IPsec

- Administration
- Configuration

PPTP Server

Dial-in Server

- Clients **Networking** Routes Download

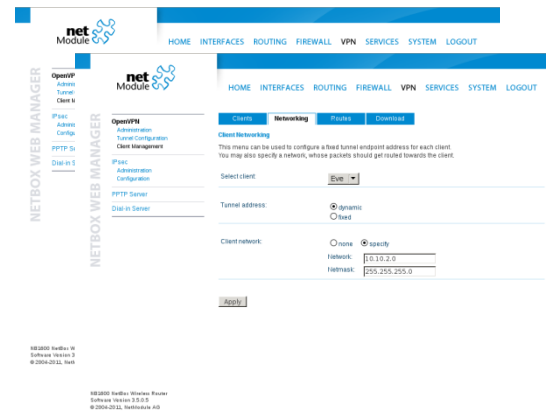
Client Networking

This menu can be used to configure a fixed tunnel endpoint address for each client. You may also specify a network, whose packets should get routed towards the client.

Select client: Alice ▾

Tunnel address: dynamic
 fixed

Client network: none specify
Network:
Netmask:



The screenshot shows the NetBox Web Manager interface. The top navigation bar includes 'HOME', 'INTERFACES', 'ROUTING', 'FIREWALL', 'VPN', 'SERVICES', 'SYSTEM', and 'LOGOUT'. The 'VPN' section is active, and the 'Networking' sub-tab is selected. The main content area displays the 'Client Networking' configuration page for client 'Alice'. The 'Tunnel address' section has 'dynamic' selected. The 'Client network' section has 'specify' selected, with 'Network' set to '10.10.0.0' and 'Netmask' set to '255.255.255.0'. An 'Apply' button is visible at the bottom of the configuration area. The sidebar on the left shows the 'NETBOX WEB MANAGER' menu with 'OpenVPN' expanded to show 'Administration', 'Tunnel Configuration', and 'Client Management'. The 'IPsec' section is also visible with 'Administration' and 'Configuration' options. The footer of the page contains the text: 'NB1600 NetBox Wireless Router Software Version 3.5.0.5 © 2004-2011, NetModule AG'.

Step 2d: Download client configuration

OpenVPN

[Administration](#)
[Tunnel Configuration](#)
[Client Management](#)

IPsec

[Administration](#)
[Configuration](#)

PPTP Server

Dial-in Server

Download OpenVPN Client

[Windows](#)
[Linux](#)

Download Expert Mode Files

Server address/hostname:

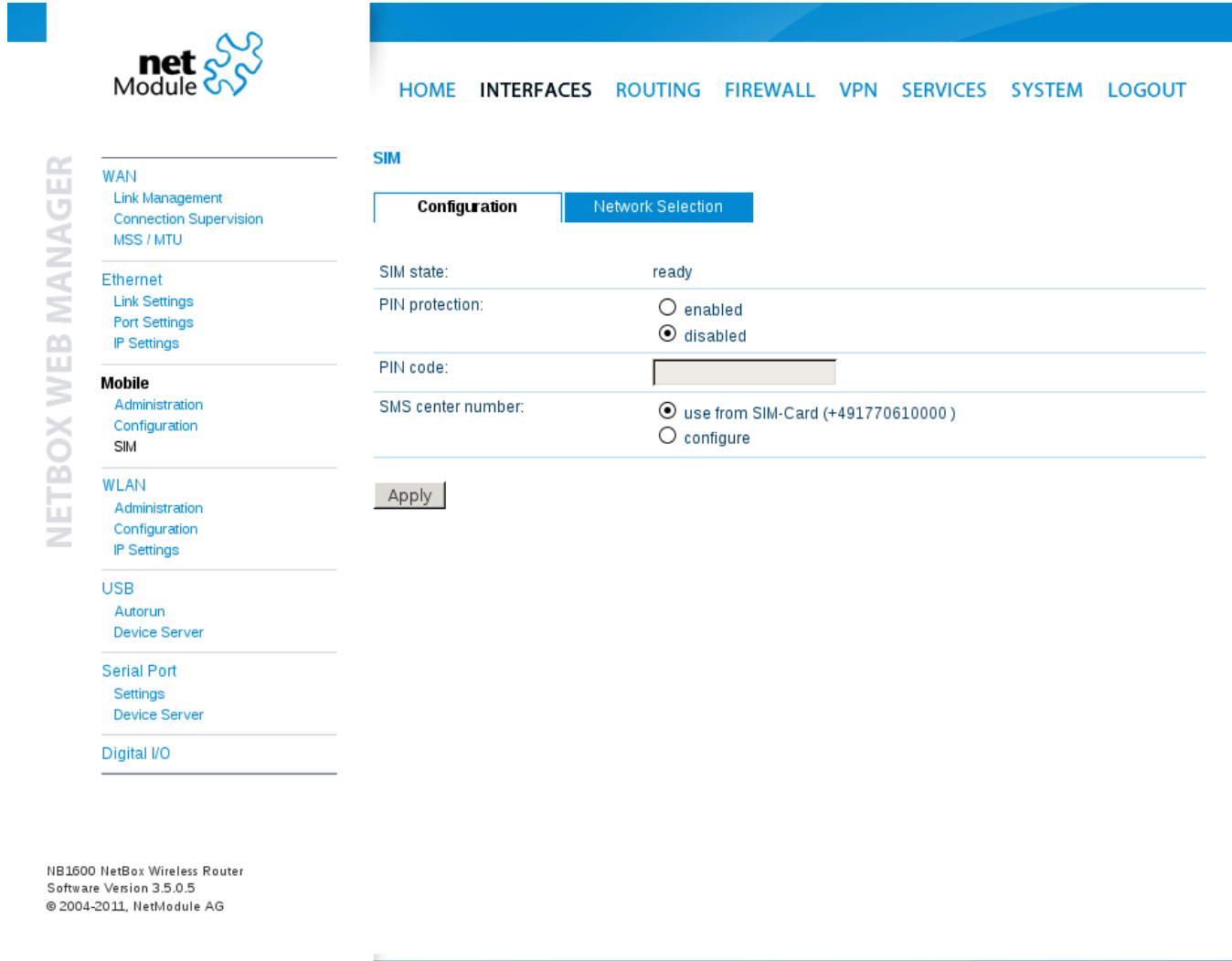
[Download](#)

Step 3: Setting up customer side


- Data Sim card needed
 - Consumer flat rate
- Connect Computer
 - DHCP client or fixed
- Connect older equipment
 - RS-232
- Connect antenna
 - Short one on device
 - Or external with cable



Step 4a: Configure router – SIM card



The screenshot shows the NetBox Web Manager interface. On the left is a vertical sidebar with the text "NETBOX WEB MANAGER" and a list of menu items: WAN (Link Management, Connection Supervision, MSS / MTU), Ethernet (Link Settings, Port Settings, IP Settings), Mobile (Administration, Configuration, SIM), WLAN (Administration, Configuration, IP Settings), USB (Autorun, Device Server), Serial Port (Settings, Device Server), and Digital I/O. The main content area has a top navigation bar with "HOME", "INTERFACES", "ROUTING", "FIREWALL", "VPN", "SERVICES", "SYSTEM", and "LOGOUT". Below this is the "SIM" configuration page, which has two tabs: "Configuration" (selected) and "Network Selection". The configuration fields are: "SIM state: ready", "PIN protection: disabled" (radio button selected), "PIN code: [input field]", "SMS center number: use from SIM-Card (+491770610000)" (radio button selected), and "configure" (radio button). An "Apply" button is located at the bottom of the configuration area.

net
Module 

NETBOX WEB MANAGER

WAN
Link Management
Connection Supervision
MSS / MTU

Ethernet
Link Settings
Port Settings
IP Settings

Mobile
Administration
Configuration
SIM

WLAN
Administration
Configuration
IP Settings

USB
Autorun
Device Server

Serial Port
Settings
Device Server

Digital I/O

HOME INTERFACES ROUTING FIREWALL VPN SERVICES SYSTEM LOGOUT

SIM

Configuration Network Selection

SIM state: ready

PIN protection: enabled
 disabled

PIN code:

SMS center number: use from SIM-Card (+491770610000)
 configure

Apply

NB1600 NetBox Wireless Router
Software Version 3.5.0.5
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Step 4b: Configure router – provider

WAN

[Link Management](#)
[Connection Supervision](#)
[MSS / MTU](#)

Ethernet

[Link Settings](#)
[Port Settings](#)
[IP Settings](#)

Mobile

[Administration](#)
[Configuration](#)
[SIM](#)

WLAN

[Administration](#)
[Configuration](#)
[IP Settings](#)

USB

[Autorun](#)
[Device Server](#)

Serial Port

[Settings](#)
[Device Server](#)

Digital I/O


[HOME](#) [INTERFACES](#) [ROUTING](#) [FIREWALL](#) [VPN](#) [SERVICES](#) [SYSTEM](#) [LOGOUT](#)

Profile and Fallback Management

You don't know these settings? [Load them from our database.](#)

Parameter	Primary Profile	Fallback Profile
Phone number:	<input type="text" value="*99***1 #"/>	<input type="text" value="*99***1 #"/>
User name:	<input type="text" value="testprofil"/>	<input type="text"/>
Password:	<input type="password" value="●●●●●●●●"/>	<input type="password"/>
Access point name:	<input type="text" value="corporate.swisscom.ch"/>	<input type="text"/>
Authentication method:	<input type="text" value="CHAP"/>	<input type="text" value="PAP+CHAP"/>
Call to ISDN:	<input type="checkbox"/>	<input type="checkbox"/>
IP header compression:	<input type="checkbox"/>	<input type="checkbox"/>
Software compression:	<input type="checkbox"/>	<input type="checkbox"/>
PPP DNS query:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Enable specific client IP address:	<input type="checkbox"/>	<input type="checkbox"/>
Specific client IP address:	<input type="text"/>	<input type="text"/>
Profile switch condition:	<input type="text" value="Never"/>	<input type="text" value="Never"/>

Step 4c: Configure router – connection



NETBOX WEB MANAGER

- WAN
 - Link Management
 - Connection Supervision
 - MSS / MTU
- Ethernet
 - Link Settings
 - Port Settings
 - IP Settings
- Mobile**
 - Administration
 - Configuration
 - SIM
- WLAN
 - Administration
 - Configuration
 - IP Settings
- USB
 - Autorun
 - Device Server
- Serial Port
 - Settings
 - Device Server
- Digital I/O

HOME INTERFACES ROUTING FIREWALL VPN SERVICES SYSTEM LOGOUT

Administrative Connection Status

Administrative connection status: enabled, permanent
 enabled, dial on demand
 disabled

Redial attempts: endless
 numbered

Dial on demand idle timeout: (minutes)

Application area: mobile
 stationary

Service type:

NB1600 NetBox Wireless Router
Software Version 3.5.0.5
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Step 4d: Configure router – connection

WAN

Link Management
Connection Supervision
MSS / MTU

Ethernet

Link Settings
Port Settings
IP Settings

Mobile

Administration
Configuration
SIM

WLAN

Administration
Configuration
IP Settings

USB

Autorun
Device Server

Serial Port

Settings
Device Server

Digital I/O

[HOME](#) [INTERFACES](#) [ROUTING](#) [FIREWALL](#) [VPN](#) [SERVICES](#) [SYSTEM](#) [LOGOUT](#)

WAN Link Management

This menu can be used to define and prioritize your WAN links. Depending on your hardware, you can choose from **Mobile** (GSM/UMTS), **WLAN**, **Ethernet** and **PPPoE**. WAN links have to be configured and enabled before adding them. In case a link goes down, the system will automatically switch over to the next link in the priority list. You can configure each link to be either established when the switch occurs or permanently in order to minimize link downtime.


Prioritization Settings

Priority	Link Name	Establishment Mode
1st priority:	Mobile	permanent
2nd priority:	None	
3rd priority:	None	
4th priority:	None	

Apply

Step 4e: Configure router – VPN

NETBOX WEB MANAGER



OpenVPN
[Administration](#)
[Tunnel Configuration](#)

IPsec
[Administration](#)
[Configuration](#)

[PPTP Server](#)

[Dial-in Server](#)

[HOME](#) [INTERFACES](#) [ROUTING](#) [FIREWALL](#) [VPN](#) [SERVICES](#) [SYSTEM](#) [LOGOUT](#)

Tunnel 1 | Tunnel 2 | Tunnel 3 | Tunnel 4

Tunnel 1 Configuration

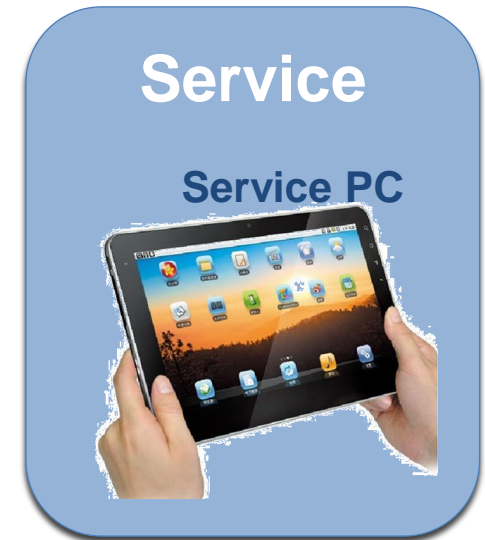
Operation mode: disabled client standard
 server expert

Expert mode file (zip):

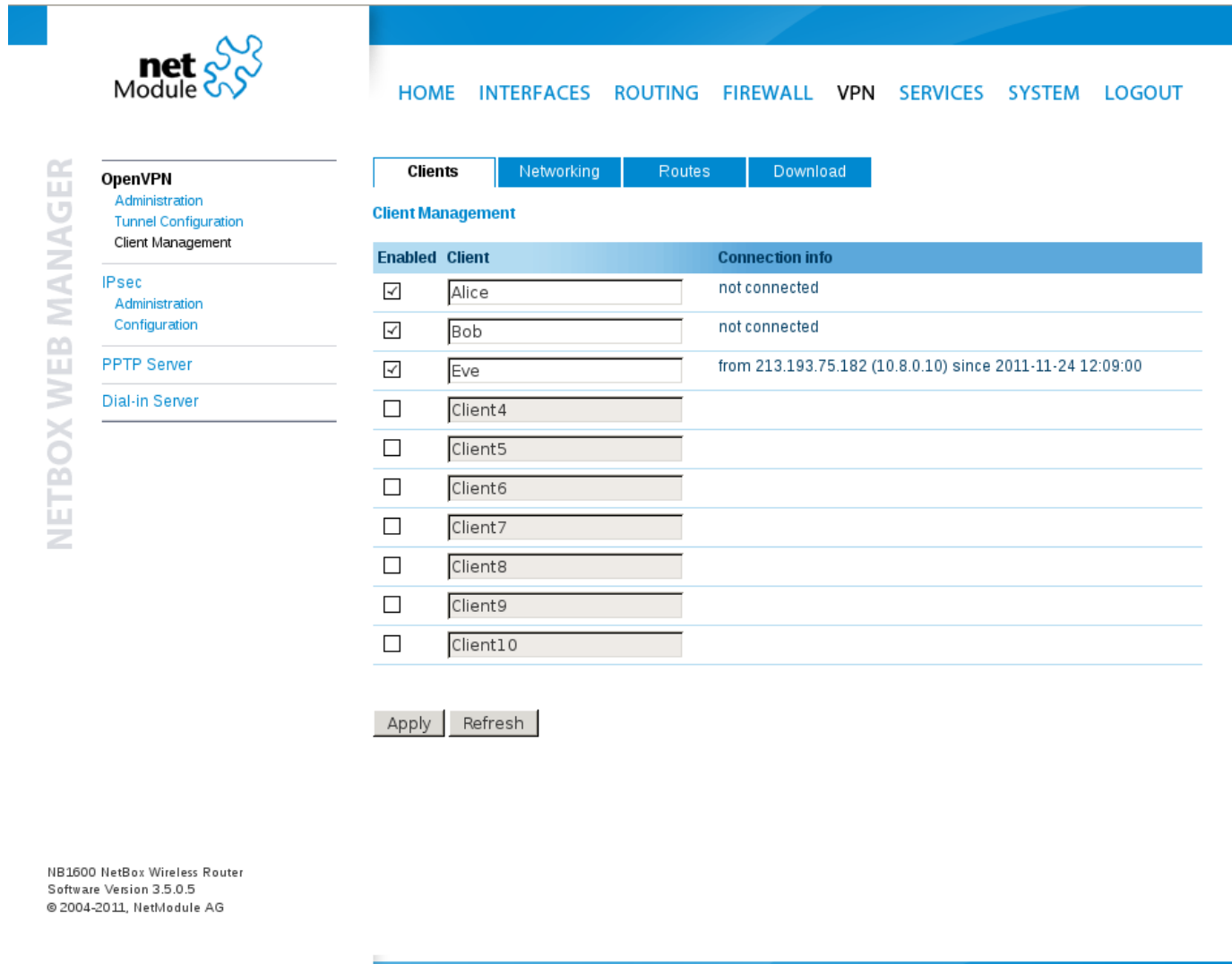
NB1600 NetBox Wireless Router
Software Version 3.5.0.5
© 2004-2011, NetModule AG

Step 5: Configure service PC

- Install OpenVPN GUI
 - www.openvpn.se
- Load client configuration
- Start OpenVPN GUI and connect
- If remote serial is used
 - Install and configure VSP3
- Start your application
- ...and...



..see who is sitting at the table.



The screenshot displays the NetBox Web Manager interface. On the left is a vertical sidebar with the text "NETBOX WEB MANAGER" and a menu for "OpenVPN" (Administration, Tunnel Configuration, Client Management), "IPsec" (Administration, Configuration), "PPTP Server", and "Dial-in Server". The top navigation bar includes "HOME", "INTERFACES", "ROUTING", "FIREWALL", "VPN", "SERVICES", "SYSTEM", and "LOGOUT". Below this is a sub-menu with "Clients", "Networking", "Routes", and "Download". The main content area is titled "Client Management" and features a table with columns "Enabled", "Client", and "Connection info". The table lists clients Alice, Bob, Eve, and Client4 through Client10. Alice, Bob, and Eve are checked and show connection status, while Client4 through Client10 are unchecked. At the bottom of the table are "Apply" and "Refresh" buttons.

Enabled	Client	Connection info
<input checked="" type="checkbox"/>	Alice	not connected
<input checked="" type="checkbox"/>	Bob	not connected
<input checked="" type="checkbox"/>	Eve	from 213.193.75.182 (10.8.0.10) since 2011-11-24 12:09:00
<input type="checkbox"/>	Client4	
<input type="checkbox"/>	Client5	
<input type="checkbox"/>	Client6	
<input type="checkbox"/>	Client7	
<input type="checkbox"/>	Client8	
<input type="checkbox"/>	Client9	
<input type="checkbox"/>	Client10	

Apply Refresh

NETBOX WEB MANAGER

net Module

HOME INTERFACES ROUTING FIREWALL VPN SERVICES SYSTEM LOGOUT

Clients Networking Routes Download

Client Management

OpenVPN
Administration
Tunnel Configuration
Client Management

IPsec
Administration
Configuration

PPTP Server

Dial-in Server

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This was the M2M Menu

Thank You.

