dovado

USB Mobile Broadband Router

Reference Manual 7.1.5

dovado The Mobile Choice for your Broadband Internet

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dovado™ The Mobile Choice for your Broadband Internet

1   Introduction

Thank you for choosing a Dovado USB Mobile Broadband Router. Dovado has quickly become the leading brand in terms of support for 4G/LTE and 3G USB modems. Simply insert your compatible USB modem into the Dovado router, and the two will be automatically paired in order to get you online on the Internet. A well-known fact about Dovado is that it is quick to support new modems and features, and provide you a smooth upgrade process with help of the DOVADO Firmware Utility (Express Upgrader).

On every page in the router's User Interface, you will see this icon. Click it, and you will be directed to the appropriate chapter in the reference manual automatically for further information and guidance.

1.1   Package contents

Make sure all of the listed items below are included in your package. If something is missing, kindly contact your reseller.

- Router - USB Mobile Broadband router
- Power supply
- Quick Wizard Guide
- 2 x 3dBi antennas
- USB extension cable

Additional required items:

In addition to the items above you will need a mobile broadband USB modem in order to connect to a mobile network.
This modem provides the wireless link to your operator's network and is sold separately.
To use the Internet you need a computer.

1.2   Access the router

To access your router's menu system, connect your computer via WLAN or LAN port (with an Ethernet cable) and access the http://192.168.0.1 website.

If you are connecting your computer via Wireless LAN, search for a wireless network called "DOVADO-XXXXX", where XXXXX is a unique combination of characters. These details, along with the passphrase, are available on a label on your router.

Once you have reached the login page, the information below is the default settings for your router:
Username: **admin**
Password: **password**

1.3   Limited Internet Mode (L.I.M.)

Dovado routers support most Hi-Link (Huawei) and CWID (ZTE)-based USB modems. However, unlike traditional USB modems, these specific models are designed to act as routers, imposing certain limitations due to the complication of a second private network layer.

If you are in need any of the following capabilities, then please make sure to contact your operator or reseller the router-based modem:

Limitations with Huawei Hi-Link modems:
UPnP, SMS and Bridge Mode cannot be used.
Port Forwarding is limited to a maximum total of 15 individual rule assignments.
The 192.168.1.x subnet cannot be occupied by the Dovado in conjunction with these modems, as the Hi-Link device occupies this subnet.

Limitations with ZTE CWID modems:
UPnP and Bridge Mode cannot be used.
Port Forwarding does not work (at all) on certain models.
SMS is limited to certain models.
The 192.168.1.x subnet cannot be occupied by the Dovado router in conjunction with these modems, as the Hi-Link device occupies this subnet.
Some modem models might already occupy 192.168.0.1, therefore requiring your Dovado router to use a different subnet's IP address, such as 192.168.2.1.

There exists at least three known combinations of capabilities when it comes to ZTE router-based modems

Version 1: (USB modems)
- SMS is available
- Port Forwarding is not available
- IP address cannot be changed on the USB modem, but might be required on Dovado router

Version 2:(Mobile Hotspots devicesa and USB modem)
- Port Forwarding is available
- SMS is not available

Version 3: (Mobile Hotspots devices, not USB modem)
- SMS is available
- Port Forwarding is available

1.4   Direct interface vs PPTP interface

The Dovado router can have two IP Interfaces connected to the Internet: **Direct Interface** and **PPTP Interface.** It is possible to access the router and clients behind it via both interfaces using their IP addresses

- **Direct Interface** this is the router's own interface which it normally uses to communicate on the Internet
- **PPTP Interface** this interface exists when a VPN PPTP service is used. When PPTP is used the router has two IP addresses to the Internet.

Remote Management and Port forward notice
Not all Mobile Broadband operator, ISP and VPN providers allow external access to your router from the Internet. If the provider blocks such access it is not possible to use Remote Management or performing port forwards. Please contact your Internet Service Provider if you are having problems with accessing the router from the Internet.

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2   Status Overview Bar

Date: 2013-06-24   Time: 13:05   Traffic ⬇ / ⬆ (GB / GB)   Position
Signal: 58 % (4G)   Connection: USB   Modem: 0.76 / 0.04   Lat: 56.9800
SMS (0)   🟢 IP: 37.197.43.44   ⚙*New FW*   Long: 24.0310
WLAN: 20MHz (3)   🟢 VPN: 46.246.88.68   🟠 03:30 🔴 21:22

Atop of the user interface, a bar displays an overview of your Internet connection.
This information sits outside the security zone of your router, and does not need to be accessed via an authorized login, thus saving time on checking the connection status.

The Connection Status Overview Bar shows the following information:

Date: Synchronized with a Dovado NTP (Network Time Protocol) server upon each new successful Internet connection.

Signal: The latest measurement gathered by the USB modem upon connection is displayed in a percentage value, along with the technology (2G, 3G or 4G).
The value is only updated after initiating a new connection.

SMS: Shows the number of unread SMS's.

WLAN: Shows whether a 20 or 40MHz channel has been manually selected. The value within the brackets indicates the channel(s) currently used.

Time: Displayed in a 24-hour format (HH:MM). In case the displayed time is incorrect, you can set the time zone in the **System->NTP** page.

Connection: Indicates whether your current Internet connection is via the inserted USB modem or via an Ethernet WAN port. This is useful if your router has been configured to perform automated failovers between one dropped Internet connection to a secondary (backup) connection.

IP: Shows the IP address the router has received from your Internet/Mobile-broadband Service Provider.

VPN: Show the IP address that the router has received from your VPN Service Provider

Connection Indicator: Green color indicates that the Dovado router is connected to the Internet via a USB modem. Yellow color indicates that the router is connected Internet, but LAN and WiFi clients is disable to access the Internet due to that scheduled event in the Internet Scheduler. Red color indicates that it is disconnected from the Internet.

Traffic: Quickly displaying this month's Internet consumption in gigabytes (GB) on the downlink and uplink of the USB modem.

New FW: Indicates if there is a new firmware for the router. Click on the text to get to the Live Upgrade page

Position: The router's GPS coordinates are displayed to the far right of the Status Overview Bar. These coordinates can by automatically updated if in a moving vehicle (with help of a GPS dongle in the additional USB port on the router), or are fixed coordinates when entered manually in the POSITION->SETTINGS menu.

Sunrise/Sunset: Based on the geographic position (GPS coordinates); the router will be able to automatically calculate what time the Sun will rise and set each day. This will dynamically shift throughout the year, and will assist you in automatically executing certain Home Automation tasks, for instance the powering off/on the lamps at home in accordance with the rising/setting of the Sun.

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3   Menu System

The menu system is structured into sub-categories related to various functions and features. For each topic, there are sub-menus to the right side where you can alter the settings to suit your needs. All changes that are applied must be saved. Regardless of how many changes have been applied throughout the menu, they will only take effect once you have applied a Restart.

3.1   HOME

To view information about your Dovado router, click on the Home button in the menu. This is the first page you will see once logging into your router.

3.1.1   Home

This page displays information such as the router's serial number and also which firmware version it currently operates on.

3.1.2   Start Wizard

The Setup Wizard is a simple walk-through configuration that will ask you which settings you wish to use in order to access the Internet as well as secure your wireless network.

3.1.3   Troubleshooting

By default, the Troubleshooting Wizard is continuously enabled. If it detects during the course of your setup that there is something wrong, the Troubleshooting Wizard will then advise you on what the possible faults may be.

Note: The Troubleshooting Wizard will not operate if either the Connection Tracker, Ethernet WAN port or a CDMA modem is being used.

3.2   INTERNET

Once you have configured your Mobile Internet connection in the **Modem** section, you can define the role of your Internet interface (USB modem or Ethernet WAN port) as well as improve the general Internet uptime. This section will also give you the means to access your monthly data consumption.

Improvement of connection uptime: If your mobile Internet connection is not holding well in terms of uptime, then please make use of the Connection Tracker^{TM} feature within the sub-menu. This feature will poll the Internet to see if it is responding. If there is no response, the router will take steps to correct the situation.

Bridge Mode (NAT disabled): For usage scenarios where an additional private network (Network Address Translation) would impose difficulties, your Dovado router can be converted from the regular Routed Mode (NAT enabled) to Bridged Mode (NAT disabled). Please note that by selecting Bridge Mode, the Dovado router will not be operating its firewall.

3.2.1   Internet Connection

The router can be used in two different modes: Routed or Bridged.

Routed Mode (NAT Enabled)
In the (default) routed mode, multiple devices share a single public IP address. In this mode, the Dovado router can be used with either a USB modem (default mode) or with a fixed broadband connection such as ADSL or Public Ethernet.

Make sure to connect your ADSL/CABLE-TV modem with an Ethernet cable to the WAN Port of

the Dovado Router.

Bridge Mode* (NAT disabled)
Bridge Mode will disable the NAT/routing functionality and allow you to connect any device to the router's LAN port or WLAN interface. The device you connect to the router will get its IP address directly from the mobile network.

In this mode, the router will be transformed into a converter between USB and LAN or WLAN. As it will no longer retain any functionality dependent on IP, certain features such as Connection Tracker, PPTP VPN and E-Mail Notifications will not be operational during use of Bridge Mode.
Please check http://www.dovado.com/modems to see which modems support Bridge Mode

To alter your router into a bridge, go to the **Internet->Internet Connection** page within the router menu, and select either of two Bridge Modes. If you are not planning on using any specific WLAN client, then use the "Bridging USB with LAN" option in order to avoid any associated issues that may arise later on. Once the Bridge Mode has been applied, saved and restarted; the router will indicate "CONNECTION: BRIDGE" when you log into the menu page again.

3.2.2   Status

Here you can see the details on your current connections. There are 3 categories.
- **Modem** which shows the modem information
- **Ethernet** which shows the Ethernet WAN information
- **PPTP** which shows the PPTP settings

If no data is available for the connection, then the data for that connection will be blank

3.2.3   DNS

Here you can alter the DNS (Domain Name System) settings in the router.

Dynamic DNS Server Settings:
In most cases, the operator which provides the internet service towards your router is handing out a constantly-shifting (dynamic) IP address. The Dynamic DNS feature allows you to contact your router via an easily accessible hostname, such as myrouter.mydyndns.com

The Following Dynamic DNS provider is supported

- **DynDNS.org**
- **Loopia.se**
- **No-IP.com**
- **freedns.afraid.org**
- **Other Dynamic DNS provider**

The following information needs to be filled in

- **Profile Name** The name of the Dynamic DNS profile
- **Service Provider** Select which provider you want to use
- **Username** The username to your Dynamic DNS provider
- **Password** The password to your Dynamic DNS provider
- **Domain Name** here you enter the Dynamic DNS name that you have registered. e.g example.dyndns.org
- **Interface** Here you can select if you should use the direct IP interface (default) or use the PPTP interface to update the dynamic DNS

Special note for freedns.afraid.org
   Hash freedns.afraid.org does not use usernames, instead they use a private hash signature

Special note for Other Dynamic DNS provider
   Service URL here you enter the URL to your Dynamic DNS provider that the router should use

when updating your Dynamic DNS. It uses HTTP Basic authentication to authenticate with the server
This is an example of a Service URL: *http://dyndnsprovider.com/update? hostname=customhostname*

Custom DNS:
If your operator's DNS servers are unavailable, or if you wish to use a 3rd party DNS server, then insert the IP address of up to two different servers which the router should use. As a result, all devices on your network will then use those specified DNS servers.

3.2.4   Connection Tracker

In order to ensure maximum Internet availability you can use the Connection Tracker feature. When inserting a minimum of 2 unique IP addresses, these addresses will be "pinged" with an interval that you specify in minutes in the Interval field. After entering the selected IP addresses, you can test the ping function to these addresses by pushing the Test now button directly below the IP address fields. The result will be shown to the right of each IP address field.

WARNING: Please note that if you are paying for bandwidth usage, activating this function will add data consumption to your monthly bill. An approximate figure for the additional monthly data consumption will be indicated directly to the right of the Interval field. Raising the interval value will lower the monthly consumption.

Should your internet connection drop, you have 3 options on how the router should react:
- Redial only (in WAN Ethernet mode: Reinitialize interface). Default value that attempts to reestablish the broadband connection.
- Redial and Restart (the router restarts itself after 3 failed redial attempts). Using this option, your local area/wireless network will be unreachable for a short while during the restart of the router.
- Auto fail-over to secondary interface. (WAN-to-USB or USB-to-WAN). The router is connected to both a USB modem and a fixed broadband connection. Both of these interfaces must be properly configured in the event of a fail-over between each other. You can check which interface is your primary connection on the **Internet->Internet Connection** page.

3.2.5   Traffic

It is possible to keep track of how much Internet traffic is consumed each new calendar month. A log is also held for the previous month. The chart displays how much data has been downloaded via the USB modem. A total is also calculated for the month per interface. As these figures are automatically updated every few minutes, a forced update can be manually requested by pushing the Update button.

3.2.5.1   Notification of Data Traffic Usage

Upon enabling this feature, the router can send you an SMS and/or E-Mail notification after a certain amount of data has been consumed by your Internet connection. It will then continuously update each time it passes that interval, thus providing you with an overview of your monthly data consumption.
The router can alert you after every 100MB, 250MB, 500MB and 1000MB of downloaded or totally accumulated bi-directional traffic passed during the calendar month.

Note: By using your USB modem directly in the computer, the router will only be able to display the amount of data the router itself has consumed when the USB modem is inserted into it. It will not display what the USB modem has consumed; therefore, to acquire the most accurate accumulated figures, please contact your Internet service operator.

To enable notification by SMS, go to **SMS->Remote Control**, and select the Traffic Limit Reached, located under Notification SMS.
To enable notification by E-Mail, go to **System->E-Mail**, and enter your E-Mail account configuration.
Then proceed to **Internet->Traffic**, and select how often you would like to be notified by SMS and/

or E- Mail for an updated total of your calendar month's data consumption. You can also specify which kind of data to keep track of (downloaded only, or downloaded and uploaded; depending on your mobile broadband subscription terms).

For more information, please visit http://www.dovado.com/features/traffic

3.3 MODEM

This submenu will provide you the means of checking the reception signal of your mobile broadband, as well as configure/alter the settings of your mobile broadband Internet connection.

3.3.1 Modem Status

This page details your USB modem's radio signal with the corresponding mobile operator base station. It will also display which network mode the router is connected to (4G, 3G or 2G). In addition to which, exact details regarding which mobile operator your SIM card is registered to, along with the USB modem's unique IMEI number, and the SIM card's unique IMSI number. This information might be useful when dealing with your mobile operator's helpdesk.

3.3.2 Modem Settings

On the **Modem->Modem Settings** page, you will be able to insert all the valid inputs in order to access the Internet via your mobile operator.

There are several relevant bits of information which are necessary in order to complete this task successfully:
- APN (Access Point Name). If you are not sure what your mobile operator's APN is, please contact them or check with your modem manual.
- PIN code.This is your PIN code provided with your SIM card which resides in your USB modem.
- Username & Password: Some operators may require you to insert a username and password along with APN information in order to authenticate towards the mobile network. If you haven't been provided with this, then using only an APN might be sufficient. If not, then please contact your operator.

My L.I.M modem requires a username and password for its web admin pages
This setting is needed if your USB modem requires Username Password to access its GUI

Enable DMZ settings on ZTE modem to support Port Forwarding
This settings needs to be enable if you have a ZTE modem with WEB gui support and want to do portforward

Modem On/Off Switch
If you enable the "Activate Modem On/Off Switch" then you will be able to control the power to the USB modem using the Modem On/Off switch on the router.

3.3.3 PPP

Here you can alter the settings regarding your modem connection
- **Echo timeout** The PPP echo timeout value, this value is normally **60** seconds
- **Echo count** The PPP echo counter value, this value is normally **3** seconds

3.4 WAN

The Dovado routers can not only be used with mobile broadband they work also with Cable-modems, ADSL-modems etc.To activate the WAN port you must first go to the tab **Internet->Internet Connection** and select WAN as Primary Connection.

3.4.1   WAN Port Settings

The default setting is that your operator automatically will allocate you an IP address. Should your operator have given you a static (specific) IP address, then select Manual (Static) settings and fill in the given information in the relevant fields.

3.5   LAN

Here you can alter the settings that are relevant to your specific network, such as the Local Area Network (LAN) IP addressing, the Dynamic IP address pool (DHCP) as well as the Port Forwarding rules that will allow inbound access to your computers from the outside (Internet).

3.5.1   LAN Settings

The network settings for the router.
Network Settings allows you to change the default IP address for your router.
However, in most cases you do not need to change this setting.

Note: The IP address for the router is used on your private network only. It is not possible to change the subnet mask.
Click on Save LAN Settings and then Restart for the changes to take effect.

3.5.2   DHCP

DHCP Server allows you to enable or disable the built-in DHCP server.
When enabled, all clients on your private network will automatically obtain an IP address from the range specified under Client IP Address Range (valid range is from 1 to 254). When disabled you have to manually enter an IP address from this range into each client.
Client Network Information allows you to set a domain name for the router and specify an additional DNS server.

Static Address Assignment: Can be used when you want a client to obtain the same IP address each time it logs on to your private network. This setting works no matter if the DHCP Server is enabled or disabled. Select how you want to identify the client, either by hostname or MAC address (it is possible to define 253 static IP addresses based on MAC addresses or hostnames).Type in the hostname or the MAC address under Host Identifier and finally, set the desired IP address under Internal Address.
Please make sure not to assign the IP address of the router to any of the clients.
Click on Add and then Save DHCP Settings when you are finished.

View DHCP Table: is a function that shows the IP and MAC addresses of all clients that are connected to the router.

Click on Save DHCP Settings and then Restart for the changes to take effect.

3.5.3   Port Forwarding

The settings for manually unblocking certain communication ports in your private network.
Reserved Ports is a list of logical ports that cannot be used to access your private network from the public Internet.
Port Forwarding to LAN lets you specify which ports clients on the public Internet shall be able to communicate through, to clients on your private network.

Under Port Range, select a range (any range that does not contain the ports listed under Reserved Ports) from 1-65535. Select the type of traffic that should be let through on these ports, TCP or UDP, or Both. Finally, type in the Destination Address, which is the IP address of the client on your private network that you want to be accessible from the public Internet.

It is possible to select if the router should do the port-forwarding on either the Direct IP Interface or on PPTP connection if available.

It is also possible to forward incoming GRE (Generic Routing Encapsulation) traffic to a single host.

Click on Add when you are finished.
Note: By default, no traffic is permitted inwards if the request is initiated by an external user. However, clients on your private network can always access the public Internet.
Click on Restart for the changes to take effect.

3.5.4 UPnP

The settings for Universal Plug and Play.
The router supports Universal Plug and Play. UPnP is a feature that enables client application on devices behind the router to automatically trigger the opening of TCP/UDP ports through the firewall in the router. UPNP will only work on the Direct IP interface, it will not work on PPTP interfaces.
As a security precaution, this feature is disabled by default and can be enabled manually.

3.5.5 Hosts

To view the current list of connected devices, click on "Show Hosts on LAN". The list will present the IP addresses along with their corresponding unique hardware (MAC) addresses.

As certain devices on your LAN might require a familiar representation (such as "server.mynetwork.com"), you can pair the LAN IP address of that computer to "server.mynetwork.com". This means that if you try to surf to http://server.mynetwork.com from another computer on the same network, the router will redirect you locally to that specific computer.

3.6 WLAN

This menu will provide you the possibility to view/modify the Wireless LAN (WLAN) Settings.

3.6.1 WLAN Settings

Here are the settings for the wireless network.
Wireless Band drop-down menu lets you choose what wireless standard to use in your private network. Possible choices are 802.11b with a maximum transfer rate of 11Mbps, 802.11g with a maximum transfer rate of 54Mbps, 802.11n with a maximum transfer rate of 300Mbps or 802.11b +g+n if you have clients with mixed types of network cards.

Channel drop-down menu lets you change the radio channel for the wireless communication. This is useful if you experience poor performance that could be as a result of interference from other wireless devices.If Auto is selected, the router will automatically determine which channel it should select.

Bandwidth drop-down menu will be enabled whenever 802.11b+g+n or 802.11n is selected as the Wireless Band. By default, 20MHz is selected as it ensures the best compatibility with client devices. When selecting 40MHz, a second channel is enabled which can increase throughput for compatible 802.11n which also support 40MHz. Please note that by selecting 40MHz, you might experience incompatibility with certain devices. In such case, please use 20MHz.

The 2nd Channel drop-down menu will be available once the Bandwidth has been manually set to 40MHz. From there, you can appoint the placement of the secondary channel to be located either below or above the primary channel. Please note that when using 40MHz, the gap between two bonded channel points is equivalent to 4 numbered channels. Therefore, if selecting channel 6, the paired channel will either be 2 or 10, depending on your selection of placement.

Data Rate drop-down menu is the setting for the transmission speed at the selected Wireless Band. If you experience problems at high data rates, then we recommend that you select a lower data rate.

SSID (Service Set Identifier): is the name of the router that will appear in other Wireless LAN clients when they perform a network search.

Default value is **DOVADO-XXXXX**
Where XXXXX is a unique combination, your unique combination you can find on the white sticker at the bottom of the router

SSID Broadcast: enables or disables transmission of the SSID from the router.
When disabled, other Wireless LAN clients will not find the router when they perform a network search.

Fragment length: is a setting that affects the quality of the wireless transmissions. If you experience a high packet error rate you can decrease this value in small steps to reduce this problem. Setting the fragment length too low may result in poor performance.
Default value is **2346**.

RTS length: is a setting that affects the quality of the wireless transmissions. If you experience inconsistent data flow you can decrease this value in small steps to reduce this problem.
Default value is **Off**.

Wireless Radio: enables or disables the WLAN. If you do not use any Wireless LAN devices it is recommended that you select disable.

Click on Save WLAN Settings and then Restart for the changes to take effect.

3.6.2 Authentication

The encryption settings for your Wireless LAN.
Encryption is enabled by default in order to restrict access of wireless devices onto your private network. To locate the name of your WLAN (SSID) along with the unique passkey, kindly look at the white label located at the bottom of your router.

There are three main types of encryption methods in the Authentication Type dropdown menu, which are WPA1/WPA2-PSK, WEP Shared Key and WPA1/WPA2-Enterprise.

WPA-PSK is the most secure, and therefore the best recommended method. Choose it from the Authentication Type drop-down menu and then enter a pass phrase between 8 and 63 characters. The key is case sensitive. All Wireless LAN clients must use the exact same pass phrase in order to access your network. The absolute securest setting is to use WPA2 together with AES ciphering; however, older devices might not support it.

If you have a device that does not support WPA-PSK authentication, then select WEP Shared Key. Choose a Key Type, either HEX or ASCII. Then choose Key Size; 64 bits (for HEX this is 10 characters and for ASCII 5 characters) or 128 bits (for HEX this is 26 characters and for ASCII 13 characters): the longer the key, the stronger the encryption. The key is case sensitive. You have the possibility to define up to 4 different keys at once so that you can rotate keys in order to randomize your security.

WPA1/WPA2-Enterprise is based on the strong WPA-PSK authentication. However, the authentication is done on a RADIUS authentication server. For the router to negotiate with such a server, the server's IP address, communication port and login password must be configured. Such a solution is typically used in an enterprise environment.

Click on Save Authentication Settings and then Restart for the changes to take effect.

3.6.3 MAC Address Control

The settings for restricting access to your private network via white-listing of authorized clients.
MAC Address Control enables or disables the MAC address filtering on the MAC addresses under **WLAN->MAC Address Control**.
MAC Address Control is a security function that limits which clients can access your private network and the public Internet through your router. Enter the MAC address of the client that you want to grant access to your network (instructions on how to obtain the MAC address in Windows and Mac OS X are listed below). Click on Add in order to grant access for a new device.
Note: that the function is enabled or disabled under **WLAN->WLAN Settings**. *Disabling the*

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function does not clear the MAC Address Control List.

Windows

1. Click on the Start button and then Run.
2. Type cmd and press enter.
3. Type ipconfig /all in the command prompt and press enter. The MAC address is found on the physical address line

Mac OSX

1. Click on the Finder icon, followed by System Preferences.
2. Open the Network icon and click on the relevant interface.
3. Click on Advanced, and the hardware ID will be shown. This is your MAC address.

3.7   VPN

The router can be used as a PPTP VPN (Virtual Private Network) terminator / client. VPN is widely used for connecting to corporate or private networks from another location.

The credentials must be given to you by the administrator of the virtual private network.

Using the VPN feature and the connection tracker is not possible at the same time. Connection Tracker will be disabled if VPN is enabled.

For further information, visit http://www.dovado.com/features/vpn

3.7.1   Info

The router can be used as a VPN (Virtual Private Network) terminator / client. VPN is widely used for connecting to corporate networks from a remote location. The credentials must be given to you by the administrator of the virtual private network.

Note: *If your Internet connection should run into any disconnects or strange behavior when using session intensive protocols (such as BitTorrent) during use of an encrypted PPTP tunnel, then please make sure to enforce a low speed cap on the relevant application. Real-time (MPPE) encryption/decryption is a CPU-intensive task for the router and offers limited bandwidth throughput.*

3.7.2   PPTP

For setting up a VPN with PPTP you need to provide the server's IP-address or hostname, along with login credentials. This should have been provided to you by the system administrator or your VPN service provider. It is sometimes optional to use encryption, referred to as MPPE. The usage of encryption will result in lower throughput as well as higher transmission latency (ping), since each data packet must be encrypted/decrypted.

To enable PPTP select the tick box and enter the VPN Server profile

To create a new VPN Server, click on the drop-down and select **Create New Profile** and fill out the following settings
* **Profile Name** here you enter the name of the profile eg. MyVPN-Service
* **Server** Enter the host-name / IP address to which you want to connect
* **Username** The VPN account username with which you want to connect, if you don't know it please contact your IT administration or your VPN provider
* **Password** The VPN account password with which you want to connect, if you don't know it please contact your IT administration or your VPN provider
* **Echo timeout** The PPP echo timeout value, this value is normally 60 seconds
* **Echo count** The PPP echo counter value, this value is normally 3 seconds
* **MPPE** (encryption) Select if the connection should use encryption or not. Encryption can

have impact on the throughput and latency. By default, encryption is Enabled
- **Default profile** Click here if you want that the router automatic should connect with this profile

If VPN goes down Here you select what the router should allow to happen if the VPN disconnects. Either you let the hosts continue to surf on the Internet directly (without VPN), or you decide to block them from accessing the Internet.

Advanced Settings

- **Number of retries** Here you can choose how many attempts the router should try to connect to the VPN. You can also select that it will continue to do unlimited retries. If the router can't connect within the limit, a manual connect or a reboot of the router will be required

- **Routing of internal services** Here you can select how the router's own traffic should be routed to the Internet; either via the Direct connected interface or the PPTP/VPN tunnel. All traffic that originates from the router such as DNS-lookups, NTP, Live Update checks, etc shall use this interface

- **Forced VPN** Here you can designate which hosts on your network should use the VPN connection. By default, all hosts on the network will use the VPN connection. If you only wish to permit specific hosts to use the VPN, then click the Specific Host selection. Once added, all other hosts that haven't been entered shall use the Direct Internet (not VPN).

For debugging any issue with your connection, kindly refer to the the user log (SYSTEM->LOG). The log may provide you useful information regarding errors that might occur.

3.8   SMS

Dovado routers support SMS traffic with most USB modems, though not all.
To see a list of supported modems, kindly visit http://www.dovado.com/modems

3.8.1   Inbox

This page will display any received messages. It displays the number of the sender along with the message. You can reply to or delete an SMS within this page.

3.8.2   Send

You can compose an SMS message and send it either to a number stored in your router's Phonebook, or to any other number. The telephone number must be entered in the proper international format beginning with a country code; for example 4670xxxxxxx.
If you wish to send any messages to a short service number (usually only a few digits long; shorter than a regular telephone number), then tick in the Short Number box above the message.

A regular SMS supports 160 characters, however the Dovado router also supports long text messages, and will display how many messages your inserted text is equivalent to.

3.8.3   Remote Control

A short text command can be sent from your phone to administer certain tasks. The configuration allows a range of authorized mobile phone numbers to be added to the list.
You can specify which number will be allowed for sending commands, receiving notifications, or both. To insert the number, use international dialing format (e.g. 46 for Sweden, followed by the rest). For each number that is inserted with its rights, click on Add to list.

Note: For each number that is added (and tagged with a "Notification" tick mark), an individual SMS shall be sent by the router in case of any notification.
Using SMS functionality may generate an extra cost to your mobile broadband subscription

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3.8.3.1   Remote Commands

SMS Commands
Select the commands you want the router to listen to on an incoming SMS.
Send the bold text to the router to trigger the command
- ☐ **Status** - Reports current connection status of the router
- ☐ **Restart** - Restarts the router
- ☐ **Disconnect** - Shut down modem connection *
- ☐ **Connect** - Connect the modem connection *
- ☐ **Reconnect** - Reset connection and connect *
- ☐ **Upgrade** - Upgrade to latest available firmware
- ☐ **Internet** - Turn on or off LAN access to Internet by sending 'internet on' or 'internet off'

Home Automation
- ☐ Allow sending SMS (saying eg 'lamp1 on') to trigger a home automation task

* Not available in Bridge mode

The short text commands are: Status, Restart, Disconnect, Connect (or Reconnect), Upgrade.

Status: The router will reply to you stating that it's either connected or disconnected from the Internet. It will also contain the IP address (if connected) of it's Ethernet WAN / USB Modem along with signal information.

Restart: The router will restart itself.

Disconnect: The router will disconnect itself from the mobile broadband network. Internet connection will be dropped, though SMS will still be active.

Connect (or **Reconnect**): The router will connect itself to the mobile broadband network. Internet connection will be enabled.

Upgrade: You can instruct the router to fetch the latest firmware release directly from a Dovado firmware server, without involving your use of a computer.

3.8.3.2   Notification SMS

Notification SMS
Select the events you want the router to send notifications about
- ☐ **New Firmware** - Send SMS when there is a new FW for the router *
- ☐ **Restart** - Send SMS when a restart has happened
- ☐ **Connection Down** - Send SMS when the main connection has gone down *
- ☐ **Connection Up** - Send SMS when the main connection has gone up *
- ☐ **Traffic limit reached** - Send SMS when set traffic limit is reached
- ☐ **Switched connection** - Send SMS when the router has switched Internet Access Method * **

* Not available in Bridge mode
** Connection Tracker must be enabled

Unexpected events which occur in regards to the Internet connection along with the overall status of the router can be reported by SMS to all numbers listed for "Notification". Notification messages can be sent to recipients for the following events:

New Firmware: The router will check the Dovado firmware servers once a day for a new firmware release. As soon as it has identified a newer release, you will be sent an SMS notification from the router.

Restart: In case the router was forced to restart itself after 3 unsuccessful connection attempts (based on the settings located in the Connection Tracker). A restart can also be affected by an unexpected power failure.

Connection down: The Internet connection has been dropped. The router at this point has acknowledged a drop, and is working on resolving this situation by either redialing the connection, restarting itself or switching connection to the secondary Internet interface (depending on what has been defined in the **Internet-->Connection Tracker** site)

Connection up: An Internet connection has been established. It is very likely that your router will be handed a new IP address from the operator.The SMS will display the new IP address in case you would like to remotely connect to it for administration purposes.

Traffic limit reached: More information about this is available in section Notification of Data Traffic Usage.

Switched connection: In case your Connection Tracker has been configured to automatically perform a connection fail-over between two interfaces, you will be notified of this change, along with further information pertaining to that new connection.

3.8.4   Settings

To activate the usage of any SMS features, click on Activate the SMS handler. By default, the router will select the Auto method for retrieving the incoming messages. You can also manually select which method it should access the messages, be it either from the SIM card or from the USB modem. Auto mode will attempt both.

Should the router experience any issues in receiving text messages from your phone, then type in the SMS Service Center number that is tied to the SIM card you are using inside the USB modem. If you do not know what it is, then either check the advanced settings within the modem dashboard software (when using modem in computer), or contact your mobile operator for details. Make sure to insert the SMSC telephone number in international dialing format.

3.8.5   Phonebook

If you are sending frequent SMS texts to a regular list of recipients, then enter those recipients to the router's Phonebook. Once inserted, you can compose a new message and simply select the recipient by name.

All entries into the Phonebook are to be stored in the international number format. It is also possible to store Short Numbers as well.

3.9   NAS

If you insert into a unused USB port an external USB hard drive or thumb drive, you can share out the storage centrally throughout your entire private network.
For further information, visit http://www.dovado.com/NAS

3.9.1   Info

The router allows you to insert a USB Hard Drive, Thumb Drive or MicroSD card and act as a centralized storage server for all the shared files within your network.

The NAS functionality supports storage drives that are formatted for NTFS and FAT32 file formats.

The NAS implementation provides two modes of access to these files SMB (Server Message Block) and FTP (File Transfer Protocol).

3.9.2   Shares

In order to share out a storage drive, you must pair the drive together with a unique name. Enter the name you wish to use, and select the drive from the drop-down menu. Make sure to also select which sharing method you wish to use for that specific drive. The SMB method is a regular network share, whereas FTP is a File Transfer Protocol service that requires you to use an FTP client on your computer.

For NTFS formatted disks the 'ISO-8859-1'-encoding for file names will be used by default (shown as NTFS/ISO in the user interface). If you want to use 'UTF-8' instead of 'ISO-8859-1', then check the box labeled "Enable UTF-8 for filename encoding" when adding a new share. The new share will show up as 'NTFS/UTF-8'. When creating multiple shares from the same disk, the encoding must remain the same.

For further information, visit http://www.dovado.com/NAS

3.9.3   Users

This page allows you to manage your login account credentials, as well as add additional users along with corresponding privileges. The usernames and passwords can be modified, and services can be enabled/disabled.

For example, if you wish to allow users the possibility to use the SMS API, then add/modify an account and select only the API SMS. Apply all changes by clicking on the Save Settings button, and applying a restart of the router.

Apply all changes by clicking on the Save Settings button, and applying a restart of the router.

3.9.4   SMB

The most common network share which can be accessed by all operating systems (Windows, MAC, Linux, etc). It allows you to map a network drive on your computer, and then drag-and-drop files in/out of that network share. Typical transfer rates are between 6-9MB/s (50-75Mbps).

3.9.5   FTP

This optional method is quite practical for several reasons. It allows certain network devices (other than your regular desktop/notebook computers) to dump/fetch files from the storage server in a simplified manner. In many cases with Ethernet-based security cameras, the video/photo images are typically uploaded to an FTP server.

Transfer rates tend to be somewhat higher with FTP than with the SMB protocol.

3.10   AUTOMATION

This menu covers Home Automation. You can take control of the lighting as well as power up other appliances within your home from your computer or phone.You can also control what time Ethernet LAN and WiFi clients should be able to access the Internet.

For further information, visit http://www.dovado.com/automation

3.10.1   Info

The router can be used as a server for Home Automation, allowing you to remotely control automation receivers (containing integrated radio receivers) for powering on/off household appliances, such as lamps.

You can also control what time Ethernet LAN and WiFi clients should be able to access the Internet within the Scheduler sub-menu.

 In order to get the Home Automation up and running, the following is required:

1. A TellStick from Telldus Technologies or a Gembird SilverShield/Energenie plugged into a vacant USB port in the router.
2. If using TellStick, you'll require compatible home automation receivers.
3. Configuration of the router.

Begin by configuring **Automation->Aliases** for your devices. The uniquely named receivers

(aliases) can then be controlled by:
1. Sending an SMS containing short commands such as "lamp1 on".
2. Using the DOVADO Remote Control app for iOS/Android.
3. Using the DovTelCon Windows desktop application for PC.
4. Setting up a schedule for triggering of events.
5. Manual control from the graphical web user interface (UI).

Visit the relevant pages on http://www.dovado.com for further information on this section.

The router can also be used to awaken a computer (that is on standby) if connected to one of the LAN ports on the router by Ethernet cable. The computer itself has to support the Wake-On-LAN (WOL) function.

To do so, you must add your computer as an Alias where you select the Protocol:"Wake on LAN" and enter the MAC address of the computer's Ethernet LAN network card.

3.10.2 Aliases

To enter a home automation receiver into the router configuration, you must first name it in the Alias Configuration page. To do this, name a receiver such as "Test1" (for example) and its corresponding Protocol, along with House and Channel. This is typically adjustable on the receiver device itself. Each entered alias must have a unique name, House and Channel. Upon entering each individual alias, click on Add Alias.

How to configure self-learning wall-plugs:

• Go to Automation>Aliases.
• Insert an Alias lamp1 (for example).
• Select the corresponding protocol.
• Select a Unique ID or hit Random ID (any will do) and Channel (any will do).
• Click on Add Alias.
• On the alias you wish to pair with your wireless receiver, push Learn after having pushed the self-learning button on the wireless receiver you have plugged into the wall. This will then pair the two units together.

3.10.3 Groups

If you wish to cluster several appliances into a group, you can tick in the various alias boxes and label them as a group. This is particularly useful if you have several lamps in a specific room (such as bedroom), or several appliances within the same category; such as lamps.

It is also possible to create groups of days (for instance weekdays vs. weekends) in order to simplify clustering of events.

3.10.4 Scheduler

Allows you to schedule in events to power on/off individual/all devices around the home. Besides applying general daily rules, it also allows you to create specific one-time events.

You can also control what time Ethernet LAN and WiFi clients should be able to access the Internet. For example, specific rules can be created to allow Internet access between Monday to Friday between 08:00 to 17:00, whereas all other times it will not be possible to access the the Internet. The router will still be connected to the Internet, however your network devices will be blocked from accessing the Internet.

3.10.5 Manual control

You can manually control the aliases throughout your home via the web interface in the router. To do so, go to the **Automation->Manual control** page and select which device(s) you would like to control. Select the state of operation you'd like each alias to be (ON or OFF) and push Execute.

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3.11   POSITION

With help of your location coordinates, this router is capable of applying the information into use with several applications, such as knowing what time the sun will rise and set each day when using Home Automation.

3.11.1   Info

The router can be used as a tracking device by showing its positioning e.g. on a Google Map^{TM}. The router support 2 different types of position services:
1. USB-based GPS receiver: As new GPS devices are constantly introduced to the market, go to http://www.dovado.com to see if your device is supported.
2. Fixed position: Allows you to manually enter your current position in the Web interface.

For detailed information, go to **Position->Info** and for enabling the function go to **Position->Settings** to select the positioning method you want to use.

3.11.2   Map

The map will present the location of your router, based on the coordinates that were either manually applied or automatically gathered from a GPS USB dongle.

3.11.3   GPS Settings

In order for certain Home Automation features to work (Sunrise/Sunset), the router needs to know its geographic whereabouts. There are two methods available within this menu. First option is to use a GPS USB dongle in one of the vacant USB ports on your DOVADO router. The GPS dongle will then periodically update the location if (for instance) in a moving vehicle. The second option is simple as it is intended for fixed environments such as a home or office. All you are required to do is to insert the Latitude and Longitude of the router's location. For further information, visit http://www.dovado.com/gps

Custom API key: It is possible to enter your own Google Maps key , For further info visit https://developers.google.com/maps/documentation/javascript/tutorial

3.12   SYSTEM

The System sub-menu offers you to alter some of the advanced settings within the router, along with the user management.

3.12.1   Users

This page allows you to manage your login account credentials, as well as add additional users along with corresponding privileges. The usernames and passwords can be modified, and services can be enabled/disabled.
For example, if you wish to allow users the possibility to use the SMS API, then add/modify an account and select only the API SMS. Apply all changes by clicking on the Save Settings button, and applying a restart of the router.

Apply all changes by clicking on the Save Settings button, and applying a restart of the router.

3.12.2   Remote Management

The settings for enabling remote management of the router from another location.
Web Access Port: Select which port you would like to access the router interface page from the Internet. The Standard port is port 80, which is the regular port for HTTP.

Example: Should you wish to access the settings on your router from elsewhere on the Internet, simply open a browser, type in http://<ip address of router>:<port>.
For instance, http://183.168.0.35:4430.

Status Bar: It possible to hide the status bar from being showed when connecting to the router from remote location

Hostname lookup interval: Select how often a hostname entered in the Client Access List should be updated. Frequent updates are needed if the IP-address behind the hostname changes often.

Allowed Clients: The router will only allow access for clients visible in the Client Access List. To put a client in the list, enter the corresponding IP-address or Hostname (For instance 217.65.34.12 or myhost.dyndns.org) in the Host/IP-field and click Add to list. Repeat the procedure in order to grant more clients access. Access can be granted from anywhere on the Internet by marking "Any Host" and pressing "Add to List".

Here you can give permission on which interfaces it is allowed to access the router. It is possible to access the router on both the Direct and the PPTP interface

Show Mapping: Displays the router's view of IP-addresses associated with hostnames in the "Client Access List".
All changes will take effect upon restart of the router

GPS API The router uses a software called gpsd (version 2.39) which has a API on TCP port 2947. For more info about the gpsd API please visit http://catb.org/gpsd/

3.12.3   Network Settings

Here you can alter the MTU, MRU and ICMP for the Internet connection.

Network Settings
To alter the MTU & MRU values, disable the option "Let the router select safe settings" and manually enter the MTU & MRU values. It might also be important to enable the MSS Clamping once having altered the values. The router also contains certain templates that are operator specific in cases where deviations are known.

ICMP Settings
If enabling "Drop Ping requests" the router will not respond to incoming ICMP packets such as ping request.

3.12.4   NTP

Dovado routers synchronize their clocks via NTP (Network Time Protocol) servers located out on the Internet. The synchronization occurs upon each new connection with the Internet, be it the initial (when powering up) or even during a redial while the router is on.

For the router to contain the accurate time zone, you may have to manually select your region/country/city to make sure the router will be able to present you with the right time and date. By making this selection, your router will automatically update itself whenever a time change occurs throughout a year, depending on the time zone you're in.

By default, the router will attempt to auto-detect the time zone when using a USB mobile broadband modem as your primary form of Internet access. Should this fail, then select your location manually.

If you wish to use your own NTP server settings, then activate the Custom NTP option, and fill in up to two different IP/DNS addresses of such servers.

3.12.5   E-Mail

The E-Mail sender will dispatch notifications of your consumed Internet data traffic. Enter the E-Mail address destination along with the SMTP server you wish to use in order to send out the E-Mails. To enable/select the Internet traffic reports, visit the **Internet->Traffic** page and select the notification method for the chosen quota.

If you are unsure of which SMTP server settings your mail service uses, then kindly check with your

e-mail service provider. Aside from inserting the correct username and password, it is important to confirm which SMTP port and authentication protocol you should use. After saving these settings, click on Send Test Message to verify.

3.12.6 Log

The log shows what the router has done since powering/booting up. It may provide you a good insight into any problems you may be facing with your mobile broadband connection. The clock (timestamp at the beginning of each line) makes its first synchronization once the router has connected itself to the Internet. The log file is not stored between restarts.

3.13   UPGRADE

The latest firmware is available on http://www.dovado.com/firmware
Warning! Do not remove the power or the USB modem during upgrading as this will break your router!

3.13.1 Firmware Utility Upgrader

The simplest recommended method of firmware upgrade is to visit http://www.dovado.com/firmware and download the latest version of Firmware Utility Upgrader. The Upgrader allows you to quickly establish contact with the router, type in the router's password, and perform the upgrade with the click of a button.

3.13.2 HTTP Method

Point a web browser to http://www.dovado.com/firmware and download the upgrade file to your computer. Remember where you store the file. Go to **Upgrade->Upgrade HTTP**. Click on the Browse button and select the upgrade file you just downloaded, and then click on Open. Click on Start HTTP Upload to start the upgrade process.
When the upgrade is done, the router will automatically restart and a login button will appear in the web browser. The router is ready to use once it has been restarted.

3.13.3 Live Upgrade

Live upgrade will keep your router updated with the latest firmware release available on Dovado's servers. It automatically checks for new firmware once a day, however it is also possible to check manually by click on the **Check Firmware** .

3.13.4 FTP Method

If you have an FTP server you have the choice to upgrade the router via FTP.
Once the upgrade file is on the FTP server in the root directory. Go to **Upgrade->Upgrade FTP**. Then, type in the IP address of the FTP server under FTP Server IP and the filename under Filename, then click on Start FTP Download to start the upgrade process.The text "Restarting..." will appear in your web browser when the upgrade has finished.

Note: In order to use the FTP upgrade option, the FTP server which contains the firmware image must be accessible via an anonymous FTP account.
Close the web browser and wait until the router has restarted. The router is now ready to use.

3.13.5 Configurations

This function allows you to create, as well as restore, the working configuration of your Dovado router. Each backup you save to your computer will contain all the configuration parameters you have entered in your router.
Should you have performed a factory reset to clear out all your settings, you can then restore your settings by uploading your saved configuration file via this interface.
To save the current configuration of your router to your computer, go to Upgrade->Configurations, then simply push the Download button. To restore your configuration, click on Browse (to locate the file on your computer), and then push Upload.

Tip: The configuration file which you download from your Dovado router can also be used on other routers of the same model and firmware revision. This can come in handy if performing a mass-deployment of clone configurations.

3.14   RESTART

Push Restart in order to restart the router and initiate all the settings you have saved within the menu.

3.15   LOGOUT

Normally, the login session will expire after 10 minutes of no activity. Should you wish to manually terminate the login session, then click on Logout

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4 API

The Application Programmable Interface (API) allows you to create your own custom interface with the router. You can control certain features such as Home Automation, as well as manage SMS messaging.

4.1 Enabling the API

To enable the API please do the following.

LAN Access:
Go to **System-> Remote Management**
Click **Enable LAN management**
Click **API Over LAN**
Click **GPS Over LAN**

WAN Access:
Go to **System-> Remote Management**
Click **Enable WAN management**

Enter the IP address or hostname of the trusted client or check 'all' to enable WAN access for any client. Tick in the API, HOME and SMS -boxes for Home Automation and SMS access for the client.
Do not forget to reboot the router after activating the API.

4.2 Connecting to the API

The API operates on port 6435.

To connect you can for example, type in the following within a console:
telnet 192.168.0.1 6435 (or change 192.168.0.1 to the IP of your router).
If the connection was successful you will receive something similar to:

This is version X.Y of the API
SMS is enabled and HOMEAUTOMATION is enabled for you

Followed by a '>>'-prompt

4.3 Logging in to the API

The API uses the Username and Password as specified in the Web GUI.
To log in as user admin, type:

user admin

When prompted for a password, enter it using the following syntax:

pass password

(The user and password is configured on the SYSTEM->USERS page)
If the login fails, verify & re-enter your credentials until access is granted.

4.4 API Syntax

To display information about the GUI functions and syntax, type **help**.

```
Commands:
        help (show this help)
        exit|quit|bye (close the telnet session)
        user [username] (log in as user)
```

```
      pass [secret_password] (log in with secret_password)
      info (prints general information about the router)
      services (lists services)
      upgrade (upgrades router to latest available firmware)

Tellstick:
      ts aliases (lists configured aliases)
      ts groups (lists configured groups)
      ts turn [alias] [on]/[off]
      ts dim [alias] [0...100] (Dimming the device to XX%)
      ts dims [alias] [0...100] (Turns the device off before dimming to XX%)
      ts dimot [alias] [Start level 0...100] [Stop level 0...100] [Duration xx min]
            (Dim from start to stop level over XX minutes)
      ts add [alias] [protocol] [house] [channel]
      ts add_group [alias] [list_of_device_aliases] (the list is a space separated list of devices)
      ts remove [alias]
      ts remove_group [alias]

      examples: ts add MYLAMP WAVEMAN A 3
                ts turn MYLAMP on
                ts remove MYLAMP
SMS:
      sms list (returns number of unread/read messages)
      sms send [PDU]
      sms sendtxt NUMBER [ENCODING]
            NUMBER:international format without the leading +. A leading s indicates short SMS
                  (eg s4612345678)
            ENCODING:ISO|UCS (ISO for ascii < 256). Leave blank for autodetection
      sms recv [ID] (returns PDU with ID or all PDUs in the inbox if ID is empty [ID:PDU])
      sms recvtxt [ID] (returns cleartext SMS with ID or all cleartext SMS in the inbox
            if ID is empty)
      sms del ID
```

4.5 Router info

To display information about the router, execute the command:
info

It will respond with a list of parameters, for example:

```
Firmware_Revision:7.0.0
New firmware available:yes
API_version:1.4
PRODUCT_NAME=Dovado PRO
SIGNAL_STRENGTH=-
TRAFFIC_MODEM_TX=0
TRAFFIC_MODEM_RX=0
TRAFFIC_WAN_TX=0
TRAFFIC_WAN_RX=0
CONNECTION=modem
MODEM_STATUS=DISCONNECTED
EXTERNAL_IP=-
DATE=2010-04-10
TIME=08:11
GPS_TYPE=FIXED
GPS_LAT=59.2222
GPS_LONG=18.1111
SUNRISE=05:48
SUNSET=19:50
SMS_UNREAD=0
SMS_TOTAL=0
CONNECTED_DEVICES=TELLSTICK
```

4.6 Upgrade via API

The command **info** will show if there is a new firmware available

```
Firmware_Revision:7.0.0
New firmware available:yes
API_version:1.4
```

To start a firmware upgrade of the router, execute the command:
upgrade

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4.7 SMS

The router can handle both SMS´s in cleartext (UTF-8/UCS encoded) and in PDU mode.

To view the clear-text contents of a PDU you need to convert it either on your own or, preferably, using a third-party software such as SMS Server Tools 3

Below is the API commands available related to SMS

```
SMS:
sms list (returns number of unread/read messages)
sms send [PDU]
sms sendtxt NUMBER [ENCODING]
      NUMBER:international format without the leading +. A leading s indicates short SMS (eg s4612)
      ENCODING:ISO|UCS (ISO for ascii < 256). Leave blank for autodetection
sms recv [ID] (returns PDU with ID or all PDUs in the inbox if ID is empty [ID:PDU])
sms recvtxt [ID] (returns cleartext SMS with ID or all cleartext SMS in the inbox if ID is empty)
sms del ID
```

4.7.1 Listing the number of SMS/PDUs

```
sms list (returns number of unread/read messages)
```

You can list the number of SMS/PDUs on your router using: **sms list**
The first digit of the response shows the current number of unread SMS / PDU's and the second digit the total amount in the inbox.

4.7.2 Sending SMS

The API can handle two ways of send SMS, either by receiving a PDU or via UTF-8/UCS encoded text messages.

4.7.2.1 Sending an SMS via text

```
sms sendtxt NUMBER [ENCODING]
NUMBER:international format without the leading +. A leading s indicates short SMS (eg s4612)
ENCODING:ISO|UCS (ISO for ascii < 256). Leave blank for autodetection
```

To send a SMS via text use the command **sms sendtxt**

Example:
>>sms sendtxt 46791044794 ISO
This is a text message
.

>>

4.7.2.2 Sending an SMS via PDU

```
sms send [PDU]
```

To send a SMS, you first have to make a PDU of it. Once you have the PDU, use the following syntax: **sms send <pdu>**

Example:
sms send 07910447946400F011000A9270042079330000AA0CC337392C2F83A6CD292804

4.7.3 Reading an SMS

The API can handle two ways of reading SMS, either by showing a PDU or via UTF-8/UCS encoded text messages.

4.7.3.1 Reading an SMS via text

```
sms recvtxt [ID] (returns cleartext SMS with ID or all cleartext SMS in the inbox if ID is empty)
```

To read a SMS via text use the command **sms recvtxt**

Example:

>> sms list
new/total
1/1
Stored IDs: 1

>> sms recvtxt 1
From: 46XXXXXXXXX
Sent: 12-07-23 11:27:36
Alphabet: UTF-8
ID: 1

Räksmörgås

End of SMS

>>

4.7.3.2 Reading an SMS via PDU

```
sms recv [ID] (returns PDU with ID or all PDUs in the inbox if ID is empty [ID:PDU])
```

You can list all the current PDUs in your in the inbox using: **sms recv**
This will list all PDUs using in the format ID:PDU where ID is a unique internal descriptor of that PDU (used for removing PDUs).
Conversion is needed to see the actual contents of the PDU.

Example:
>> sms list
new/total
1/1
Stored IDs: 1

>> sms recv 1
1:07916407970900F1040B91640XXXXXXXF40000217032117263800A

>>

4.7.4 Removing an SMS/PDU

```
sms del ID
```

First you need the ID of the PDU you want to remove. It can be obtained using the **sms recv** command. Then to remove a SMS/PDU, type: **sms del ID**

Example:
>> sms list
new/total
0/1
Stored IDs: 1

>> sms del 1

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>>

4.8 Check services available

Services available in current session:
To display which services that are available in current session, execute the command:

services

It will respond with the services (Home Automation and SMS) that are currently available
Example:
HOMEAUTOMATION=enabled
SMS=enabled

4.9 API Coding

The API can easily be extended with a custom front-end. When implementing a front-end, mind the following:

- The router might be behind a high-latency connection. Set a high timeout for your connection.
- When logging in to the API, the password must be encoded either ISO-8859-1or UTF-8
- When executing a command (for example ts aliases), each line of output from the API is terminated with LF (Line Feed, ASCII character 10d) and the last line of output from the command is ETB (End of Transmission Block, ASCII character 23d).
- Since there can only be one instance of the API running on the Router, a session that has been inactive for more than 60 seconds will be dropped in favor of a new session.

4.9.1 Example code

API example code for different platforms are available on http://www.dovado.mobi/

4.9.1.1 PHP

Below is a sample php script that will connect to the router and then send a SMS via the API

```php
<?php
error_reporting(E_ALL);

echo "Code example on how to send a SMS via the Dovado router API\n";

/* The following variables are set
   $username= your username to the router with API access
   $password= your password for the above username
   $ipaddress = ipaddress of your router
   $api_port = 6435;
   $smsnr = Number to send SMS to
   $smstxt = Message content for your SMS
   */
$username = "admin";
$password = "password";
$api_port = 6435;
$ipaddress = ('192.168.0.1');
$smsnr = "Enter your phonenumber in international format (4670000000)";
$smstxt = "Enter Text Here";
$readbuf = '';


/* Function to wait for >> answers */
function respons_wait($insocket)
{
do {
    $readbuf = socket_read($insocket, 4096, PHP_BINARY_READ) ;
       }while (strpos($readbuf,'>>') === false);
    $readbuf = '';
}

/* Create a TCP/IP socket. */
$socket = socket_create(AF_INET, SOCK_STREAM, SOL_TCP);
```

```
if ($socket === false) {
    echo "socket_create() failed: reason: " . socket_strerror(socket_last_error()) . "\n";
} else {
    echo "OK.\n";
}

echo "Attempting to connect to '$ipaddress' on port '$api_port'...";
$result = socket_connect($socket, $ipaddress, $api_port);
if ($result === false) {
    echo "socket_connect() failed.\nReason: ($result) " . socket_strerror(socket_last_error($socket)) .
} else {
    echo "\nConnected to router\n";
}

respons_wait($socket);


/* Sending username to the API */
echo "Sending User Name...\n";
socket_write($socket, "user $username \r\n", strlen($username)+8);
echo "OK.\n";

respons_wait($socket);

/* Sending password to the API */
echo "Sending password...\n";
socket_write($socket, "pass $password \r\n", strlen($password)+8);
echo "OK.\n";

respons_wait($socket);

/* Setting up destination SMS number */
echo "Sending SMS number...\n";
socket_write($socket, "sms sendtxt $smsnr \r\n", strlen($smsnr)+15);

/* Sending text */
socket_write($socket, "$smstxt \r\n", strlen($smstxt)+3);

/* Sending end of message */
socket_write($socket, ".\r\n",3);


respons_wait($socket);

echo "Closing socket...";
socket_write($socket, "bye \r\n",6);
socket_close($socket);
echo "OK.\n\n";
?>
```

5 Troubleshooting

Dovado routers are designed with simplicity in mind. If you are experiencing difficulties with certain features or unable to get online via the router, then kindly check the hints on the Troubleshooting page within the router menu. If those hints do not help, then proceed to http://www.dovado.com/support for further details. If you still cannot find the answer, then take contact with us via http://www.dovado.com/support/support-form

5.1 Scenarios

The following scenarios should assist you in enabling your router for Internet access, depending on which type of USB modem you have inserted into the router.
If your scenario is not available in this guide, then please visit http://www.dovado.com/support for latest update. Once the information has been inserted, the unit will automatically try to establish a connection to the operator's network. A solid green light on the Internet LED indicates a successful connection.

Note: Mobile operators typically have an Access Point Name (APN) as the key relevant point of entry towards the mobile broadband network. Make sure to have the name of your APN in advance of configuring your USB modem. If you are using any other technology besides 2G/3G or 4G, you might not require an APN.

5.1.1 Scenario 1: USB modem using a SIM card

- Go to **Modem->Modem Settings** page.
- Select your country, and operator Access Point Name.
- If your operator or APN isn't available, then insert it manually into the blank field.
- Enter PIN code of your SIM card if necessary.
- If your mobile broadband SIM card requires further username & password authentication towards the mobile network, then click on "My subscription requires username and password", and enter those specific details accordingly.
- Save Settings.
- Restart the router

5.1.2 Scenario 3: Fixed connection through the WAN port

- In the **Internet->Internet Connection** page, choose Ethernet cable in WAN port as the primary Internet connection .
- Push Save Settings.
- Restart the router

5.2 Frequently Asked Questions

Read further to see if any of the following scenarios will assist you in getting online with the Internet.
For updated Frequently Asked Questions (FAQ), please visit http://www.dovado.com/faq

5.2.1 My router is not connecting to the Internet!

Do all of the following:
- First check if the Internet LED on the router is OFF. If so, continue with the following steps otherwise go to section The router indicates Internet connectivity, yet I can't surf!.
- Please verify that you are able to connect to your mobile operator using the USB modem in your computer!
- Always insert the USB modem into the router before powering it on!
- Log into the router on default address http://192.168.0.1/
- Check that your router has identified the USB modem. If not, check if your USB modem is supported:
  http://www.dovado.com/modems
- Check the signal strength in the Modem->Modem Status page.
- Verify that a correct Access Point Name (APN) and/or Username and Password has been inserted in the **MODEM->MODEM SETTINGS** page
- Check that the APN information provided by your mobile operator is identical with the APN information used in the router settings.
- If using a PIN code on your SIM card, insert it in Modem->Modem Settings page

5.2.2 The router indicates Internet connectivity, yet I can't surf!

Test to see if you can do the following (in listed order):

1. Ping the internal IP address of the router.
- Ping the router on address 192.168.0.1 (see instructions for Window and Mac OS X below) and see if pings are replied positively
- If positive, then try the next step.
- If negative, please try with another computer if possible. Also check your IP settings and switch to DHCP (dynamic IP) settings on your computer's network interface.

2. Ping an external IP address.
- Try to ping www.yahoo.com and note if 4 pings are replied positively.
- If so, then please check your web browser's settings for any conflicting proxy settings.

Windows

1. Click on Start followed by Run and type in cmd.
2. Once the black command prompt is open, type in ping 192.168.0.1 followed by Enter.

Mac OS X

1. Click on Finder in the dock.
2. Then click on Utilities in the Go menu.
3. Make then sure to double-click on Network Utility. In the Network Utility window, click on the Ping tab. Enter the IP address 192.168.0.1 in the provided field. Click on Ping.

5.2.3   I forgot my router's password or username for accessing the router interface

The default username and password for logging in to the router interface is "admin" and "password", if you have changed it - tough luck! Nothing to do now but apply a factory reset, which will wipe out all your settings. To do this, make sure your router is running and fully booted. Then hold down the RESET button on the front of the router for about 7-10 seconds until the PWR (power) lamp begins to flicker on the front of the router. At this point, you can release the RESET button and wait approximately 2 minutes before logging in again. Make sure to write down your password next time.

It is also advised that, once you have made your ideal configuration, you save it to your computer in case of future manual resets of the router. To do this, go to **Upgrade->Configurations** page and extract a backup configuration file.

5.2.4   My firmware upgrade seems to have failed and I cannot access my router anymore

Download the latest version of the DOVADO Firmware Utility Upgrader for your router, and select the Rescue tab to restore your router.
http://www.dovado.com/firmware

5.2.5   My computer claims to be connected to my DOVADO network, but I can't reach/log onto the configuration page

The configuration page is reached through the routers IP address, which by default is 192.168.0.1. If this page returns an error start by doing a factory reset on the router by holding the reset button for about 8 seconds and then wait for 2 minutes. If that doesn't do it, clear the cache in your web browser. Also try disabling any antivirus, firewall or other security software as these can interfere with accessing the interface.

5.2.6   I changed the settings for the WLAN and now some or all of my computers or devices can't access it anymore

Most computers and devices remembers the settings for a WLAN by default, so that you don't have to enter the passkey every time you connect to it. This is usually convenient but if you change the passkey or remove the encryption altogether, the device will still try to connect with the old passkey. You can change this manually but it is usually easier and faster just to "forget" the network and then reconnect.
Instructions for doing this in Windows and Mac OS X are as follows.

Windows 7

1. Go to **Control Panel -> Network and Internet -> Network and Sharing Center -> Manage wireless networks**.
2. Right click your WLAN in the list and choose Remove network.
3. Reconnect to the WLAN.

Windows XP

1. Go to **Control Panel -> Network Connections** and right click Wireless network connection and choose Properties.
2. Go to the Wireless Networks tab and select your WLAN under Preferred networks and click Remove.
3. Reconnect to the WLAN.

Mac OS X

1. Go to **System Preferences -> Network -> Airport -> Advanced**
2. Select your WLAN in the list and click the minus sign to remove it.
3. Reconnect to the WLAN.

5.2.7 How do I connect my game console (XBOX, PS3, etc) to the Internet?

You may need to open ports for the online games to work, often just enabling UPnP which opens ports automatically does the trick (**LAN->UPnP**).
If not, you will have to find out which ports and protocols are required and then see the Port Forwarding page for instructions on how to set it up manually.

5.2.8 I have enabled the SMS functionality, but I still can't send/receive SMS

First make sure that the SMS functionality is supported by both the USB modem on our list, and that the SIM card is activated by your operator for SMS traffic. The simplest way to know is to try the USB modem directly in the computer, and see if messages can be sent/received.

Following that, check the USB modem's connection manager in your computer to see which SMS Service Center (also known as SMS-C) it is using.
Having identified the SMS-C, place that number into the SMS Service Center field in your router, located under **SMS -> Settings**. If this does not help, try upgrading the firmware on your USB modem.
An upgrade of the USB modem firmware might also solve the issue.

5.2.9 My connection speed isn't as good with the router as when I use the modem in my computer

Check that you are using the EXACT same APN in the router as you are in the dialer software in the computer.

- Check that you are using the USB modem in the exact same angle and position when conducting speeds tests with/without the router involved.
- If you're using a 4G modem, make sure you separate the router and modem at least 55 cm with USB cable to avoid interference between WLAN and 4G.
  For more information on this issue: http://www.dovado.com/4G
- Verify with a network cable to a LAN port on the router in case you are using WLAN.
- Disconnect all other computers as they might be downloading updates in the background.
- Make sure the Dovado router aswell as the USB modem have the latest stable firmware.
- Go to **System->Network Settings** and deselect Let the router select safe settings. Select the appropriate preset from the drop-down menu. Save settings and then restart the router.

6   Support

Should you require any technical support, please visit http://www.dovado.com/support
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