TeslaBOX ®

VPN SECURITY SOLUTION

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Purpose

Tesla BOX® is VPN device dedicated for industry and energetic (secure industrial data transmission through public infrastructure), military, police and the government institutions - in the country and abroad (ministries, departments, embassies, consulates..).

Description

Tesla BOX® is „dual redundant" WAN/VPN router dedicated to network traffic, where the traffic is routed according to rules defined by the user. The device is used to connect immovable as well as movable units (institutions, offices and vehicles) in a unique network over the Internet, with a high level of data protection in transfer. It can be set up (even recommended), in conditions where there is already a certain level of protection, as additional security level under the complete user control!

Application area

The device is used to create highly protected dedicated computer connections through public infrastructure with secure connection (GPRS, Satellite connection, Radio transmission).

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Characteristics

- „Diskless" device, resistant to vibration and shockproof;

- With natural cooling through chassis, without fan and other electromechanical parts, resistant to dust and high/low temperature;

- Small size, extremely lightweight, easy to install and transfer;

- 12V-220V for installation in portable/stationary systems;

- Support for multiple independent VPN connections on each of the routes, support for OpenVPN connections, support for IPSEC VPN connections, support for the work in DUAL VPN mode with automatic switchover to backup connection if the primary is disrupted;

- Comes in server and client versions. One Tesla BOX® server can support as many Tesla BOX® clients as much as hardware configuration permits, so it is adaptable to the specific customer requirements.

- Optionally supports WiFi, 2G/3G/LTE connectivity

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Hardware configuration – client

- Processor: quad-core 64bit 1GHz
- Memory: 2-4 GB DDR3-1066 DRAM
- LAN: 3x1 Gbit lan network
  (1 LAN direction and 2 WAN directions – up to 1Gbit-sec)

Hardware configuration - server

Adaptable to the specific customer requirements.

Protection level

- 512-8192 bits – asymmetric key („OpenVPN encrypted")
- 256 bits – symmetric keys for package protection
  by algorithms (AES-CEMELLIA...).

Specific characteristics

- Possibility of „backdoor" closing, „source code" insight on
  demand (unique on the market)!
- Installation in the vehicle!
- Automatic switching from one to another transmission
  route!

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Software interface

- Tesla BOX® routers (client and server) use Linux operating system, Kernel version 3.8 (currently).

- Administering Tesla BOX® router is controlled via built-in web interface in Serbian and English (expandable languages on demand).

- Web interface can be used for configuring the following options:

  - Routers monitoring, operating time, CPU utilization…
  - Network LAN configuration (ip address, netmask, gateway...)
  - StartUp service configuration
  - Firewall configuration
  - Virtual servers/Port forwarding configuration
  - Additional firewall configuration
  - Configuration of static network direction (route)
  - DHCP configuration
  - OpenVPN configuration
  - IPsecVPN configuration
  - Network connections validation…

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Protection level analyses

- There are several public algorithms from OpenSSL community. Mathematically, they can be breakable for unlimited time and with infinitely processing capacity. In practice, the asymmetric keys less than 1024 bits can be penetrated, on a dedicated super-computers, for a period of several days.

- So far, the breaking of 2048 bits asymmetric key, on the existing super-computers, has never been recorded.

- The time needed for breaking symmetric keys (for package protection of 256 bits) is several years after a sequence.

- In case of Tesla BOX®, the sequence are, via the user interface, determined by time, number of packets or bytes quantity (arbitrarily).

- More analysis on this topic are listed via link:

    http://www.highwalltech.com/1024bit-2048bit-and-4096bit-root-keys/

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Traffic degradation

At 1Gbit-sec links (degradation of speed transmission is a result of the encryption and increased volume of data):

TEST:

- At MTU – 1500 bytes, measured speed communication are:

  - Without protection - 50MBps (~400Mbps)
  - Classic SshCP (strong encryption) - 13.5-14.0MBps (~200Mpbs)
  - OpenVPN encrypted (2048bit key) -7MBps(~60Mbps)

- For slower connections, below 70 Mbit-sec, degradation of speed transmission is just a result of data volume increased :

  - In these conditions, the average registered degradation was 25% of the effective speed.

Tesla BOX® and competition

- Commercially available products are not suitable for "harder" ambient conditions (temperature fluctuations, vibration exposure, dimensions..) .
- Most devices are for stationary use on 220V.
- Most devices do not possess automatic switching to the backup communication path, in case of interruption.
- Competitive pricing is over 3000 $ (eg. ASA-5510)
- Device has interface with multi language support.
- Expensive training and administration.
- Software support is built in and hidden with possible „backdoor" .