



TOSIBOX VPN - STARLINK INTEGRATION WHITE PAPER

IMPLEMENTING VPN TECHNOLOGY OVER WI-FI & WAN



TOSIBOX

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TOSIBOX OVER STARLINK CONSIDERATIONS

Many customers who have Starlink do not realise its limitations when trying to implement VPN technology. Starlink uses CGNAT (carrier grade network translation), - CGNAT does not support port forwarding to an internal service – such as a VPN, web servers etc... nor does it allocate a routable static IP address. Outbound sessions operate just like any other internet service, allowing traffic to flow back and forth over an established session state.

Tosibox architecture overcomes CGNAT limitations.

The Tosibox server (lock) is situated on the LAN side of the Starlink connection (the inside of the network), an outbound connection is established to a Tosibox connection broker; when a Tosibox client device (software key, hardware key) wants to connect to the server (lock), a connection is made from the Tosibox client to the connection broker, the broker then bridges the two connections, and a secure VPN tunnel is established. The Tosibox platform is simple to implement with Starlink, however the devil is in the detail...

There are two connection methods, Wi-Fi & WAN.

WI-FI CLIENT METHOD

This connection is the easiest to implement and requires no alteration to the standard Starlink package. Additionally, this method is wireless and eliminates the need for cable runs. Keep in mind that distance and obstructions can lower Wi-Fi throughput, so be aware of where the Tosibox is. Any Tosibox lock that supports Wi-Fi client mode can connect to the Starlink Wi-Fi Router. Simply place the Tosibox into Client Mode, set the SSID and password fields to that of the Starlink router, set WPA2 for the authentication method.

DO NOT use 192.168.1.0/24 for the Tosibox LAN address, this will conflict with the Starlink router.

With this method you will have two networks; 192.168.1.0/24 – the Starlink Wi-Fi network, and the Tosibox LAN network – being anything other than 192.168.1.0/24

TOSIBOX Lock 500 tb-109ab9029518 | STATUS SETTINGS NETWORK admin Logout

Wireless Network: Client "AOS"

Device Configuration

General Setup | Advanced Settings

Wireless network is enabled Disable

Access Point channel: auto

Transmit power: 10 dBm (10 mW)

Interface Configuration

General Setup | Wireless Security

Network name (ESSID): ECS-WiFi

Mode: Client

Save

TOSIBOX Lock 500 tb-109ab9029518 | STATUS SETTINGS NETWORK admin Logout

Wireless Network: Client "AOS"

Device Configuration

General Setup | Advanced Settings

Wireless network is enabled Disable

Access Point channel: auto

Transmit power: 10 dBm (10 mW)

Interface Configuration

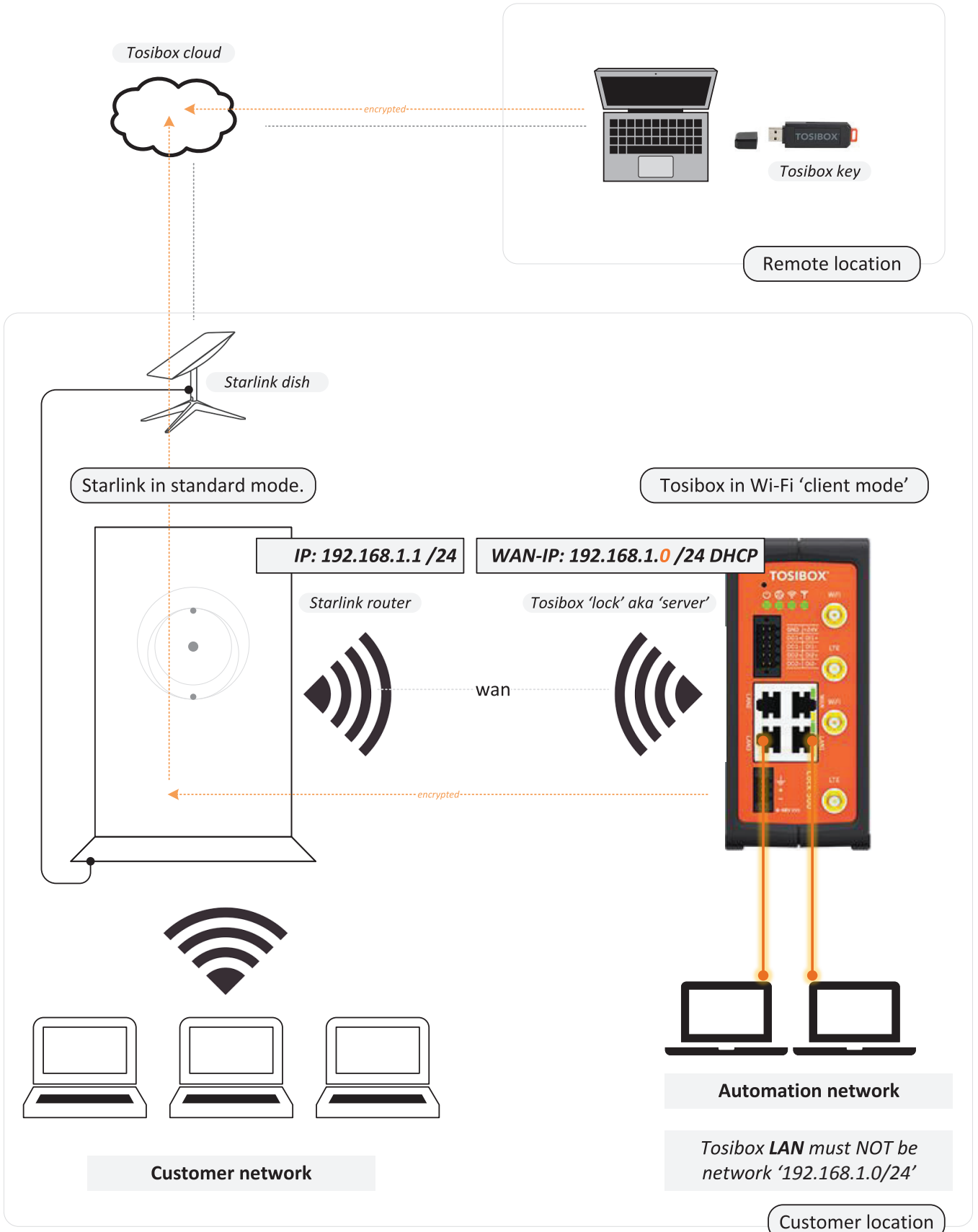
General Setup | Wireless Security

Encryption: WPA2-PSK

Key: *****

Save

Tosibox Wi-Fi Client Method, Starlink Router Topology.



ETHERNET WAN METHOD WITH STARLINK BYPASS MODE

WAN PORT

This method is written for Gen2 Starlink routers and requires additional hardware:

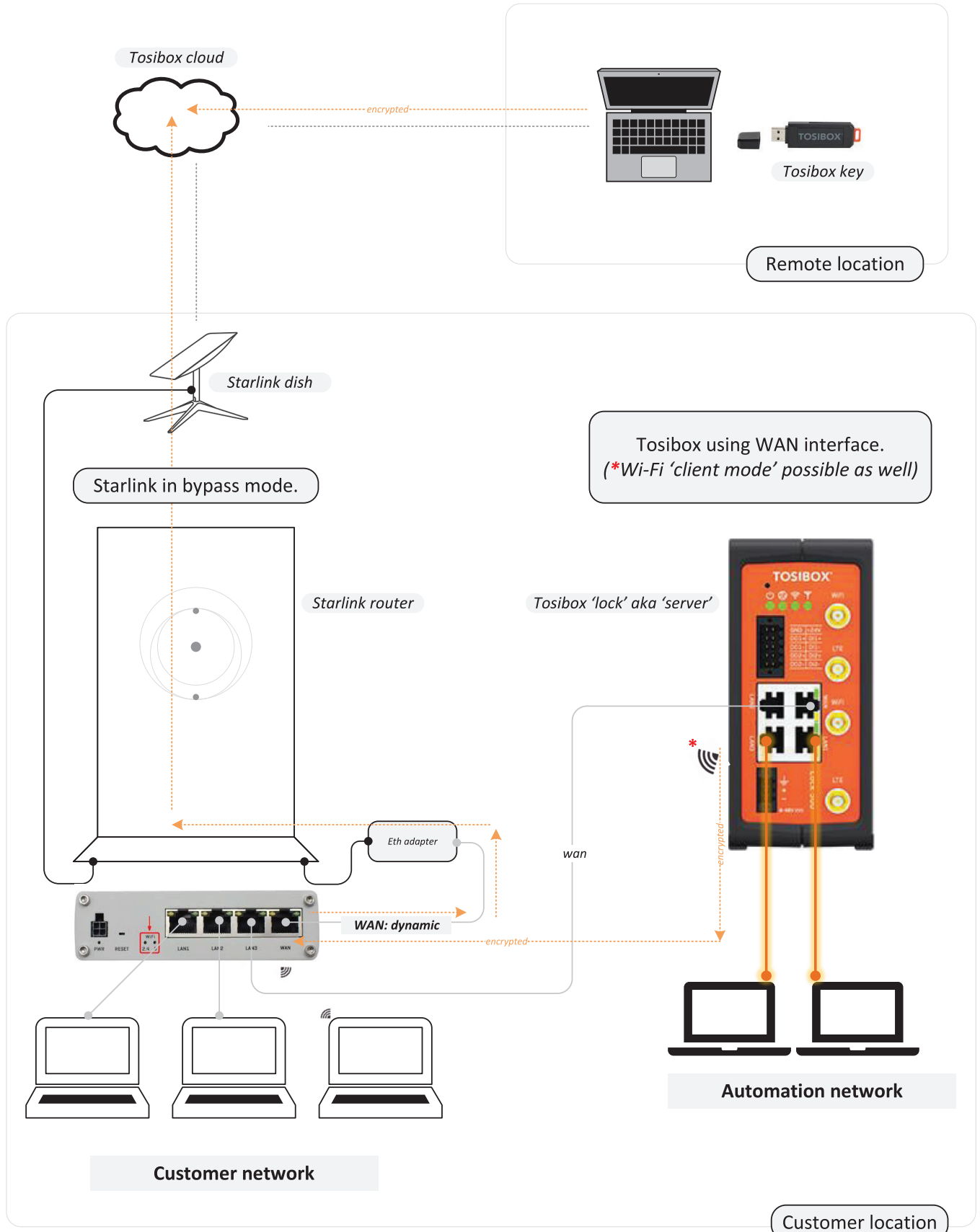
- » Router/firewall - to act as your main internet gateway
- » Wireless Access Point – if Wi-Fi is required
- » Network switch – if necessary
- » Or, an all-in-one router, Wi-Fi, switch



WAN METHOD

1. Shut down Starlink and install the Ethernet dongle.
2. Power on, login, and place the Starlink into Bypass mode.
3. Starlink router will reboot.
4. Plug the Ethernet dongle into your routers WAN port.
5. A dynamic WAN IP address will be allocated to your router.
6. Configure LAN IP address and DHCP range
7. Starlink Ethernet Dongle – mandatory. WAN method
8. Shut down Starlink and install the Ethernet dongle.
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11. Plug the Ethernet dongle into your routers WAN port.
12. A dynamic WAN IP address will be allocated to your router.
13. Configure LAN IP address and DHCP range

Tosibox WAN Method, Starlink Router Topology.



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STARLINK WI-FI ROUTER

Starlink Wi-Fi routers include GEN 1/2/3 models. Each generation offers improved performance and coverage, with the latest providing enhanced connectivity and seamless integration with Starlink satellites for optimal home internet experience.



STANDARD ACTUATED DISH

Starlink offers various satellite dishes, ranging from a portable mini, right up to a robust enterprise model. All provide high-speed internet with easy setup, designed to connect to the growing network of low Earth orbit satellites.

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TOSIBOX OVER STARLINK CONSIDERATIONS

Many Starlink users face issues with VPNs due to CGNAT, which lacks port forwarding and static IPs. Tosibox solves this by establishing a secure VPN tunnel through its connection broker, allowing seamless integration with Starlink. The setup is simple, though details matter for smooth operation.



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