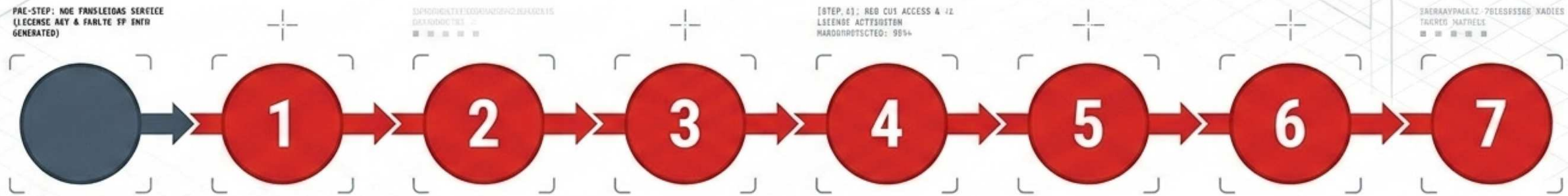
comBOX
MULTI-WAN SERVICES

Module 4: On-site Device Provisioning & Service Activation

Engineering the Flawless Deployment Workflow

comBOX Certified Partner Program (CCPP)

The 7-Step Deployment Blueprint



Pre-Step: NOC Provisions Service (License Key & Public IP Info Generated)

Step 1: Equipment Delivery & In-Lab Staging

Step 2: Physical Hardware Installation

Step 3: WAN Subnet Configuration & Internet Connectivity

Step 4: Web GUI Access & License Activation

Step 5: Local Network Integration & Routing

Step 6: Installation Validation (Testing & QA)

Step 7: Customer Handover

Pre-Deployment Staging: Winning in the Lab

The 'Why': On-site environments are chaotic. Staging in a controlled lab environment eliminates external variables and verifies baseline hardware health.

Hardware Verification

Power on the appliance, verify all LED indicators, and validate automatic IP assignment to your work station.

GUI access

Visit URL: https://192.168.1.1:8443, skip self signed certificate warning.
Verify supplied credentials are working.

License validation

Enable internet access. Upload provided license key.
Verify device activation.

Physical Installation & Switch Topology

Dual-Port CPEs (Standard)

Require an external Layer-2 network switch. Connect the LAN interfaces of all ISP modems into the external switch, then connect the switch to the single comBOX WAN port.

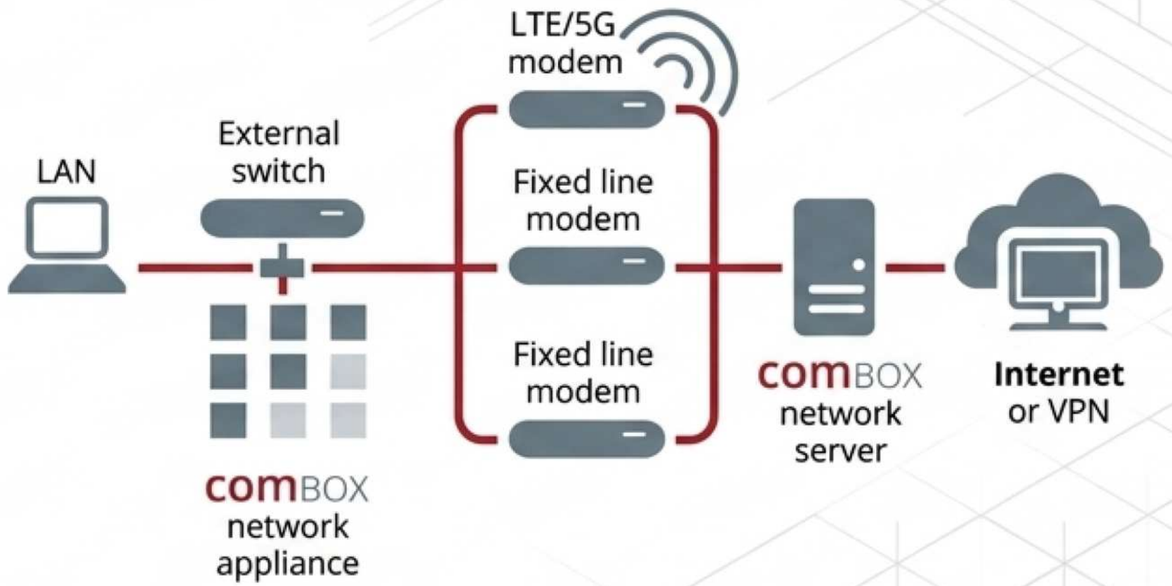
Multi-Port CPEs

No external switch required. Connect each ISP modem directly to the dedicated physical WAN ports on the comBOX appliance.

The Color-Code Imperative

Use **distinctly colored Ethernet cables** for every ISP leg (e.g., Red for Fiber, Blue for 5G, Yellow for VDSL).

- **The 'Why':** Instantly distinguish available connection legs during remote support or physical troubleshooting.



Web GUI Access & Secure Connection

comBOX
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1. Physical Connection



Connect workstation directly to the comBOX LAN interface.

2. IP Assignment



The built-in DHCP server will automatically assign a local IP to your workstation.

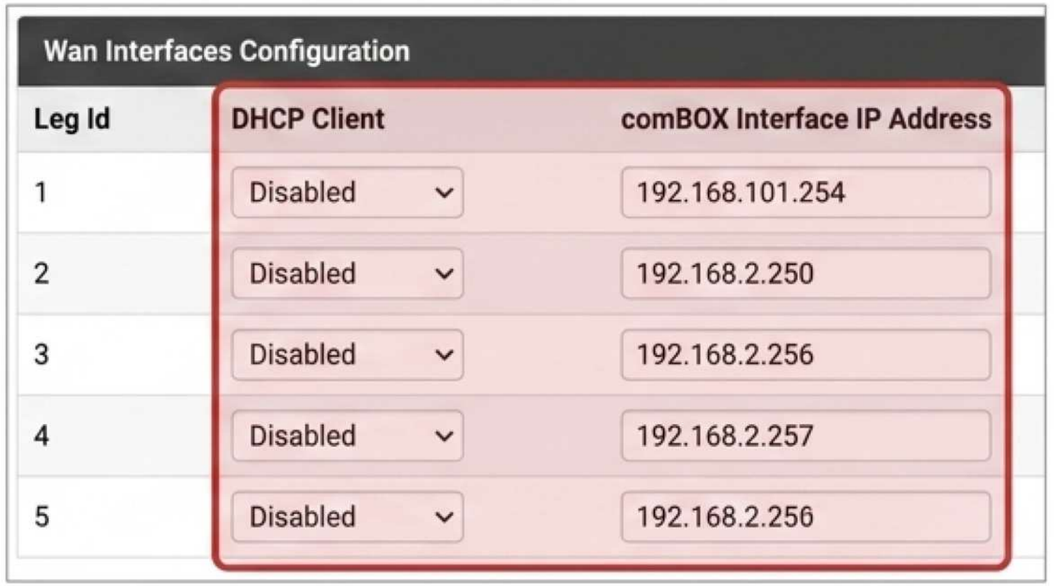
3. Access URL



Navigate to `https://192.168.1.1:8443`

Security Note

A self-signed certificate warning is expected on first deployment. Acknowledge and proceed.



ACTION: Manage Virtual WAN IPs

Choose whether to assign a static IP to the comBOX Virtual WAN interface or set the DHCP client to ‘Enabled’ to automatically receive an IP from the upstream ISP modem.

WARNING: Hardware Limitation

If the comBOX appliance has only one physical WAN port, you can enable DHCP on only one virtual WAN interface. All subsequent virtual interfaces must be configured statically.

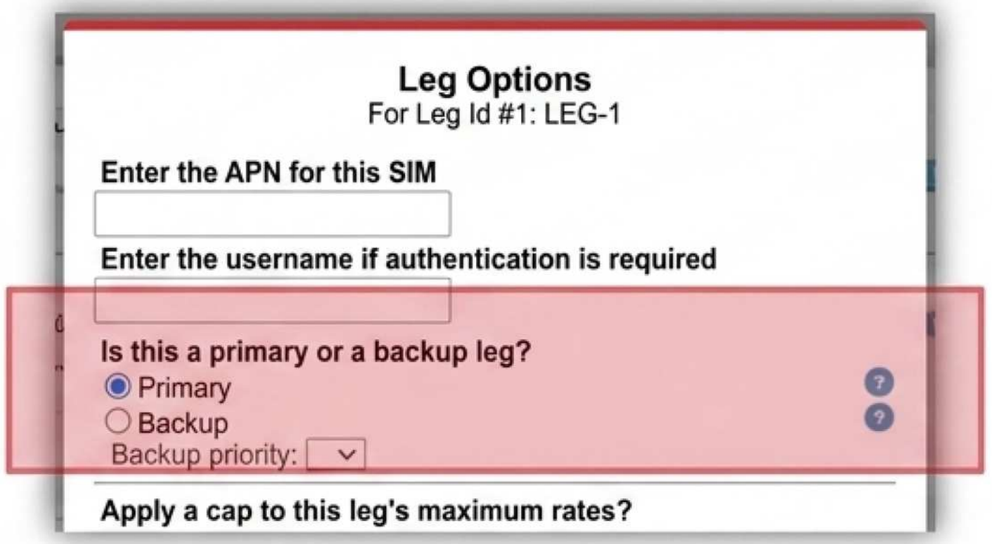
Logical Architecture & WAN Subnetting

The ‘Why’: ISP modems must reside on different subnets to prevent catastrophic routing conflicts within the aggregation tunnel.

Virtual WAN Interface	Default comBOX WAN IP	Recommended Modem LAN IP	Subnet Mask
Interface 1	192.168.101.254	192.168.101.1	255.255.255.0
Interface 2	192.168.102.254	192.168.102.1	255.255.255.0
Interface n	192.168.10n.254	192.168.10n.1	255.255.255.0

Rule: The appliance must have internet connectivity through at least one leg before proceeding to activation.

Device Provisioning & Activation



ACTION: Establish Failover Hierarchy

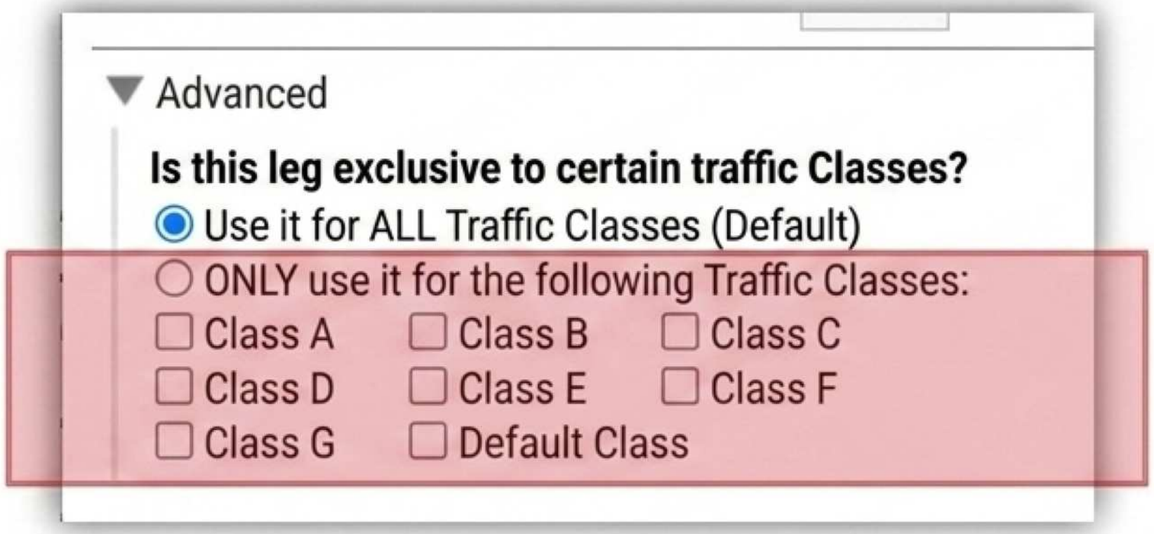
Select whether the leg is active continuously (Primary) or only upon primary failure (Backup).
For Backup legs, assign a priority tier from the dropdown.

BEST PRACTICE: Chronological Priority

Backup priority triggers sequentially. Assign lower numbers to your highest-quality backup links so they trigger first.

Legs with identical priority numbers will bond together simultaneously during a failover.

Device Provisioning & Activation



ACTION: Isolate Traffic Classes (QoS)

Check specific Traffic Class boxes to strictly limit a connection leg to highly specific application traffic, such as dedicating a clean line solely to Voice over IP (VoIP).

WARNING: Risk of Underutilization

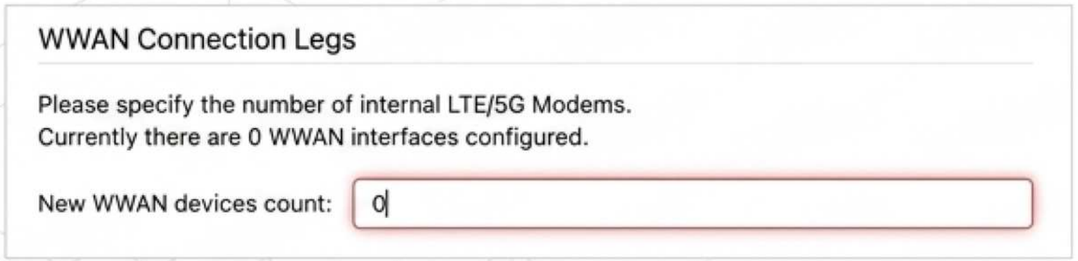
Restricting a leg to specific traffic classes inherently limits the VLL algorithm. This can result in severe connection underutilization. Only deploy this setting if you have an explicitly mapped QoS strategy.

Cellular & WWAN Integration

Hardware & Setup Logic

Hardware Setup
comBOX supports integrated internal modems (BR series/Travel Case) and external USB Quectel modems.

Administration Area
Define the number of internal WWAN devices in **Administration > Device ID & Setup.**



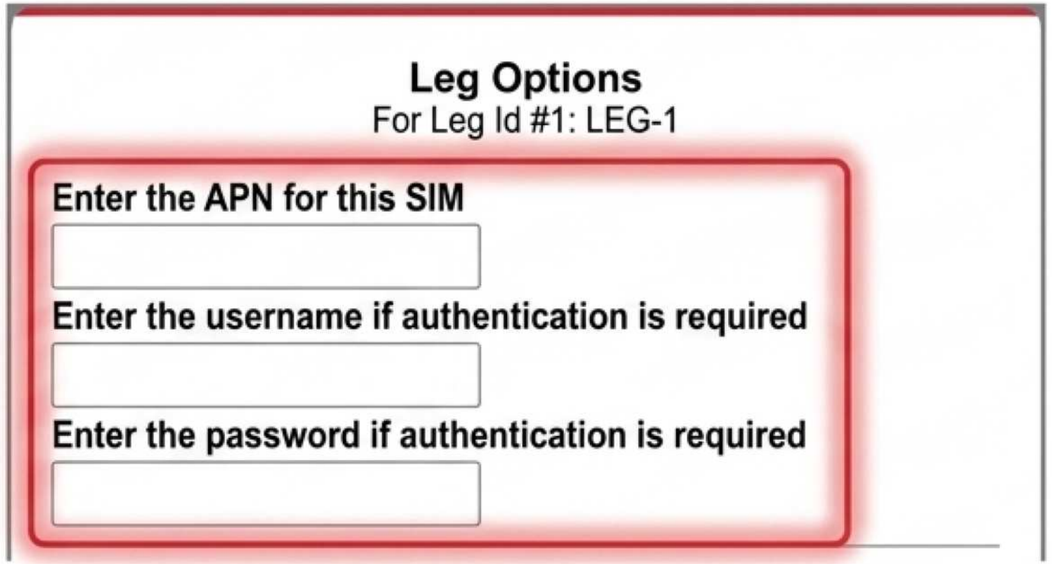
Configuration Variables
Set APN, Username, Password, and select network type (LTE/5G).

Monitoring Signal Health



- Check **Cellular Status** icon .
- **Searching** vs **Enabled** states.
- Read metrics:
  - **RSSI** (Signal Strength)
  - **RSRP**
  - **RSRQ**
  - **SNR** (Signal-to-Noise Ratio)

Device Provisioning & Activation



ACTION: Authenticate Cellular (WWAN) Links

Input the carrier-specific APN, username, and password to authenticate the internal or USB LTE/5G modems to the cellular data network.

BEST PRACTICE: Pre-Initialization Required

These APN fields will only appear if WWAN legs were previously initialized in the Administration setup. **Ensure exact, case-sensitive matching** of the carrier's APN credentials to ensure successful cellular handshakes.

Service License Activation

CRITICAL ALERT

If the product is not activated, or if the license has expired, all Internet and VPN traffic is hard-blocked by the appliance.

1

The Activation Gateway

Navigate to `Administration > Product Activation`.

Enter or upload the NOC-provided license key.

2

Verification

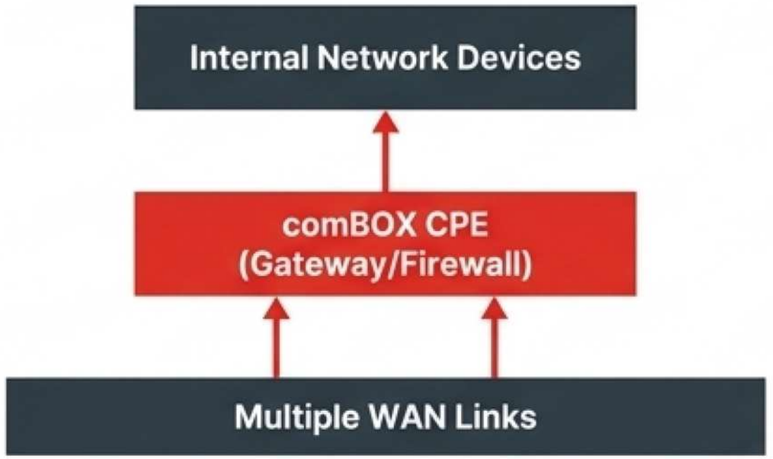
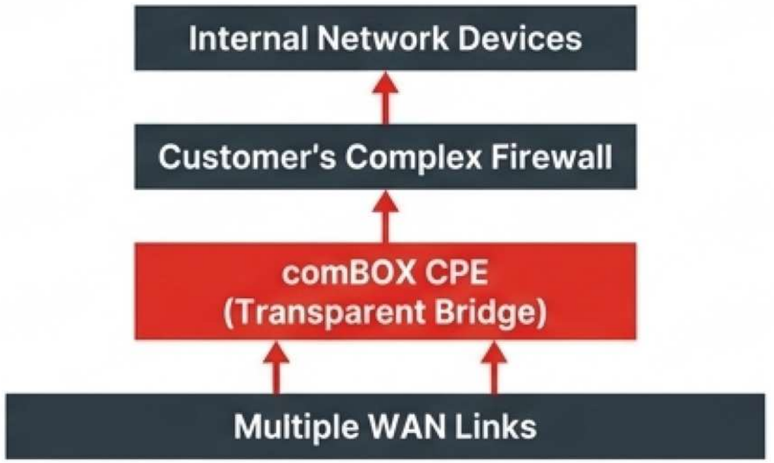
Ensure the license status changes to `Active` in the top right corner of the GUI.

3

Requirement

The device must have internet access (Step 3) to reach the Protonyx licensing server to validate the key.

Local Network Integration Matrix

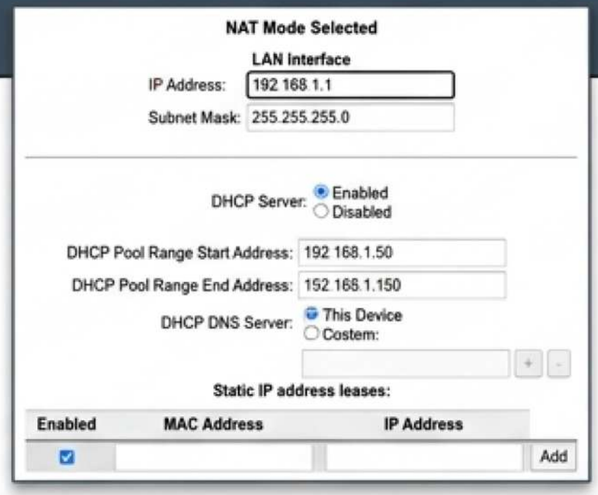
NAT Mode (Gateway/Firewall)	Bridged Mode (Transparent)
	
• **Function:** Edge firewall, translating internal IPs to a single external IP. • **Default Policy:** Outbound allowed. Inbound blocked. • **Use Case:** Standard SMB deployments without existing perimeter firewalls.	• **Function:** Transparent bridge. Public IPs are forwarded directly to the internal network. • **Limitations:** Disables comBOX GUI Port Forwarding options. • **Use Case:** Complex enterprise networks with existing advanced firewalls (Palo Alto, Fortinet) behind the comBOX.

NAT Mode & Inbound Access

LAN Configuration

Set unique private IP (Default: 192.168.1.1).

Rule: This IP must be set as the default gateway for all internal network devices.



Port Forwarding

Exposing internal services (Web servers, DVRs) to the WAN.

Routing Logic:

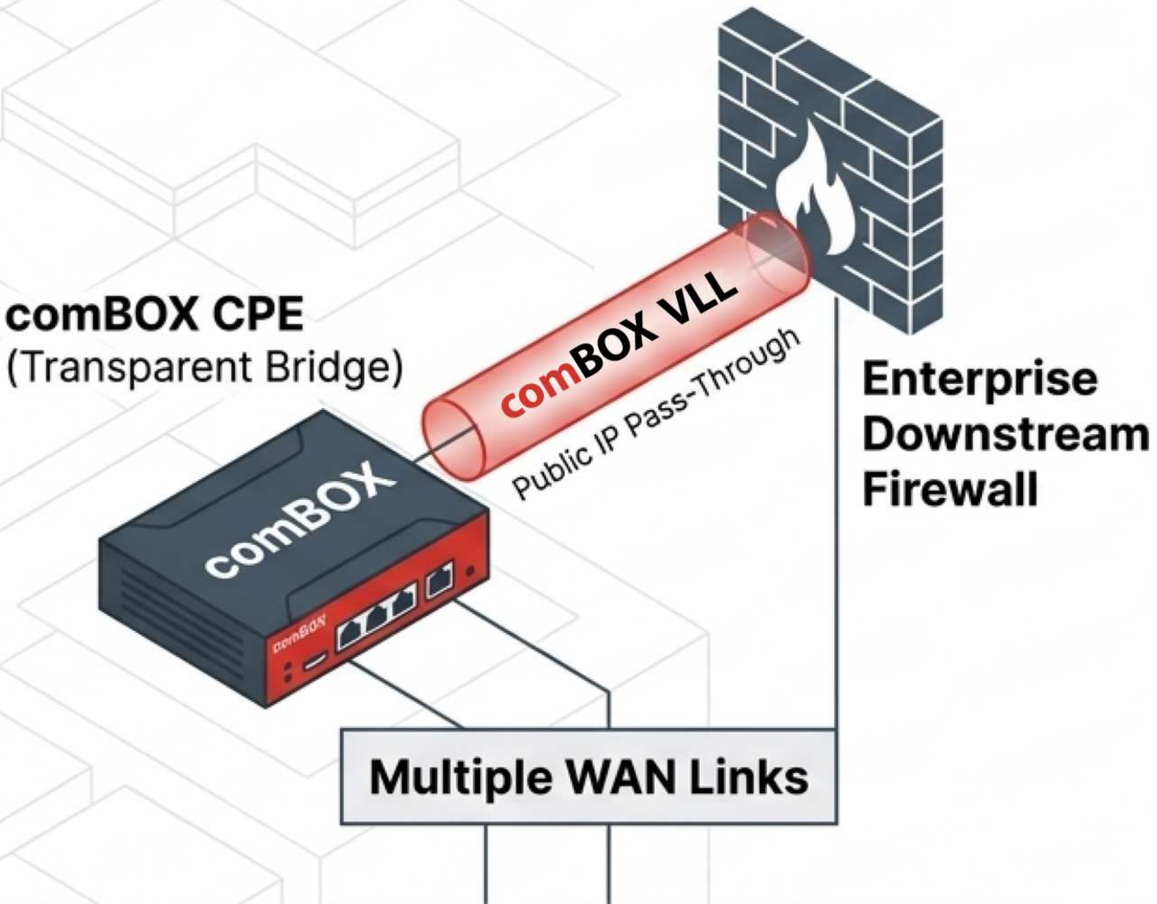
- Select Public IP (VLL Service IP or specific ISP connection leg).
- Define Original Destination Port (External) -> New Destination Port (Internal).



Warning: Changing the LAN IP requires a workstation network interface restart to regain GUI access.

Bridged Mode Deep-Dive

The 'Why': Provides full control over routing and firewall rules to third-party downstream devices.



Configuration Output: Selecting this mode generates a configuration table displaying:

Bridge Mode Selected	
Parameter	**Value**
Available IP Addresses	5.9.236.156
Subnet Mask	255.255.255.224
Default Gateway Address	5.9.236.129
Nameserver (DNS) Address	5.9.236.129

Action Required: These exact parameters must be manually entered into the WAN interface of the customer's downstream firewall.

The 7-Point Validation Protocol

The “Why”: Never leave a site without empirical proof of service delivery.

- [ ] 1. License status verifies as Active.
- [ ] 2. VLL service status is Operational.
- [ ] 3. All configured WAN links report Online.
- [ ] 4. Traffic is actively traversing the bonded connection.
- [ ] 5. Public IP assignment resolves correctly to the outside world.
- [ ] 6. Customer workstations can access required services (web, email, VPN).
- [ ] 7. Zero active alarms are present in the Protonyx monitoring portal.

Validation Tooling & Dashboards

The Built-In Speed-Test

- Located in the `Status` tab.
- Estimates current average/maximum aggregated bandwidth.
- Warning: Consumes considerable bandwidth; use cautiously on volume-charged 4G/5G legs.



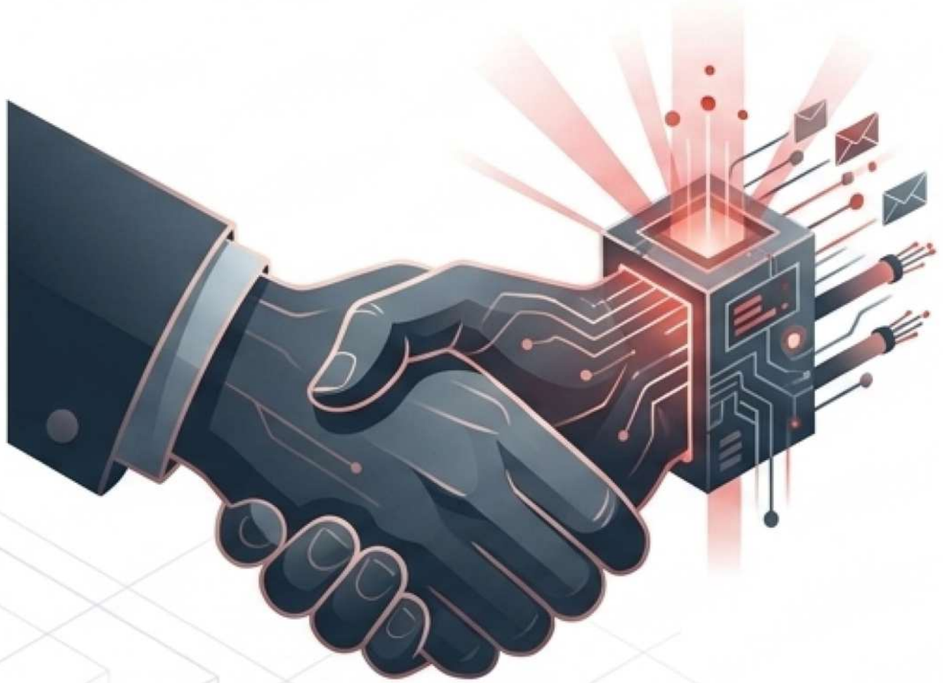
Recommended Speedtest Procedure

1. **Test ISP Legs Individually:** Run separate speed tests on each WAN connection (LTE/5G, Wired) to determine baseline speeds for each leg.
2. **Test Bonded Connection (VLL):** Run a speed test on the aggregated VLL connection.

3. **Compare Results:** Verify that the sum of the individual leg speeds is approximately equal to the speed of the bonded VLL connection.

Note: The sum VLL speed may be limited by the selected VLL package capacity.

Customer Handover & Sign-Off



The Deployment is Complete When:

1. Technical Handover

Customer physically tests and confirms connectivity from their own hardware.

2. Administrative Handover

Provide monitoring portal access credentials (if applicable) and configure alert notification email addresses in the system.

3. Documentation Handover

Deliver physical/digital documentation and record the final network configuration for future support reference.

CCPP Deployment Responsibility Matrix

Protonyx NOC Responsibilities	Partner Responsibilities
• Provisioning the VLL Service on central infrastructure. • Generating and delivering License Keys & Public IPs. • Providing Level 3 core network support.	• Hardware delivery and in-lab staging. • Physical installation, color-coded cabling, and local switch configuration. • License activation and LAN/NAT/Bridged network integration. • Direct customer handover and Tier 1/2 on-site support.

Top Deployment Best Practices & Support Tactics

Rule 1: Isolate to Validate

Test each WAN circuit individually by physically unplugging others before validating bonded operation.

Rule 2: The Portal is Truth

Always confirm that monitoring data is visible in the partner portal before leaving. If the portal can't see it, the deployment isn't finished.

Rule 3: Local vs Remote Access

Local Access: Used via LAN when on-site.

Remote Access: Used via Portal when off-site to manage configurations without truck rolls.