

Sumianda (Ferretti 630) — Network Upgrade Overview

Text Diagram (topology)

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UPPER DECK (flybridge + aft dome)

[Starlink (Ethernet Adapter)]
  | WAN Ethernet
  ▼
[YachtSense Link router + RayNet switch] (mounted inside ex-satcom dome)
  | RayNet to Radar
  |
  ├── [Quantum 2 Doppler Radar] (data only; separate 12/24 V power)
  |
  └── [Axiom Pro 12S - Flybridge MFD ("slave")]

      |
      | RayNet trunk between decks (existing cable reused)
      ▼

LOWER HELM / COCKPIT

[Axiom Pro 12S - Main Helm MFD]
(RayNet from above; gains Internet via YachtSense default gateway)

Optional/Existing:
[SeaTalkNG / NMEA2000 backbone] for pilot, engines, sensors (unchanged)

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Executive Summary

We will install a **Raymarine YachtSense Link** router/switch in the boat's former satcom dome on the upper deck.

It will:

- take **Internet** from **Starlink** via the Starlink Ethernet Adapter (WAN),
- provide **RayNet/Ethernet** to the **Quantum 2 radar**, the **flybridge Axiom Pro**, and a **single RayNet trunk** down to the **main helm Axiom Pro**.

This makes the upper dome the neat, centralized hub for high-speed data while keeping power wiring and instrument backbones unchanged.

What Changes

- A YachtSense Link is added in the ex-satcom dome and becomes the **network hub**.
- The existing **RayNet run** between decks is kept and used as the **single trunk** from the dome to the lower helm.
- The **radar's RayNet data** is rerouted **via** YachtSense Link instead of a direct point-to-point.
- **Starlink** plugs into YachtSense **WAN**, giving both Axiom MFDs reliable Internet.

What Stays the Same

- **Radar power** remains on its **own 12/24 V circuit**. RayNet carries **data only**.
 - **SeaTalkNG/NMEA2000** backbone and any pilot/engine sensors remain as-is.
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Why This Layout

- **Reliability:** hard-wired RayNet for radar and MFDs, with one clean trunk between decks.
 - **Simplicity:** one hub in the dome means fewer mystery splices and easier fault-finding.
 - **Connectivity:** both Axioms obtain Internet through YachtSense, supporting charts, updates and services.
 - **Serviceability:** the dome location is accessible and keeps RF/antenna leads short.
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Owner Assurance Notes

- **Power safety:** the Quantum 2 radar draws its power from dedicated DC wiring. The data cable does not supply power.
- **Environmental protection:** YachtSense will be mounted in a **dry, ventilated** compartment inside the dome with drip loop and strain-relief.

- **Cabling discipline:** only **RayNet-rated** cables/adapters are used; all runs are labeled at both ends.
 - **Software alignment:** both Axioms are already on Lighthouse **3.15.62**; radar is **2.44**. We keep versions aligned to ensure clean device discovery and radar overlay.
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Commissioning Checklist

1. Physical

- Mount YachtSense Link in the ex-satcom dome; secure, ventilated, and drip-looped.
- Connect Starlink Ethernet Adapter to YachtSense **WAN**.
- Connect RayNet **LAN** ports to:
 - Quantum 2 radar,
 - Flybridge Axiom Pro,
 - RayNet trunk down to main helm Axiom Pro.
- Confirm radar **DC power** supply is separate and correct.

2. Network

- Power up Starlink, YachtSense, then Axioms and radar.
- Verify both Axioms obtain IP addresses and see all RayNet devices.
- Confirm Internet access on both Axioms (e.g., weather tiles, updates).

3. Functions

- Check radar control and image on both MFDs.
- Validate chart overlay and MARPA/Doppler targets.
- Confirm existing SeaTalkNG/NMEA2000 data remains visible (pilot, engines, tanks as applicable).

4. Documentation

- Label every cable end and port; update the onboard wiring diagram.
 - Record software versions and final port map.
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Port/Link Map (for the work order)

- **Starlink Ethernet Adapter → YachtSense WAN:** "WAN-1"
 - **YachtSense RayNet LAN → Quantum 2 Radar:** "LAN-RDR"
 - **YachtSense RayNet LAN → Axiom Pro (Flybridge):** "LAN-FB"
 - **YachtSense RayNet LAN → RayNet trunk to lower helm:** "LAN-TRUNK"
 - **RayNet trunk → Axiom Pro (Main Helm):** "TRUNK-HELM"
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Risk & Mitigation

- **Heat/condensation in dome:** use stand-offs, ventilation, and silica desiccants; schedule periodic inspection.
- **Grounding/shielding:** maintain cable shielding continuity; avoid ground loops between helm and dome.
- **Unplanned Wi-Fi fallbacks:** keep the radar hard-wired; only use its Wi-Fi link as a temporary diagnostic tool.