



## Overview

*Our professional services concentrate on development, integration, and designs that empower telecom networks to deliver services at scale. By collaborating closely with our alliances and partners, we guarantee optimal solutions tailored to your distinct needs.*

*What distinguishes us is our team of experienced experts, uniquely equipped with skills in software engineering, DevOps, and automation integration. This combination enables us to deliver seamless solutions that connect software and network operations.*

# Professional Services

## EMPOWERING TELECOM (CSP) NETWORKS

At Interstellio IO, we provide next-level consulting services that transcend standard network engineering. Our expertise encompasses deep protocol knowledge, bespoke software development, and large-scale network design, making us the ideal partner for ISPs, telecom providers, and enterprises aiming to optimise, automate, and scale their infrastructure. Unlike conventional consulting firms that concentrate on surface-level configurations, we develop, implement, and integrate networking protocols at the software level, giving us a unique advantage in addressing complex industry challenges.

We specialise in building and integrating custom solutions, leveraging our NebularStack platform, which includes Billing, Subscriber Management (AAA), and orchestration systems. Our developers are highly experienced in working with various APIs and can seamlessly integrate our existing services into your current OSS/BSS platforms. For Fibre Network Operators (FNOs), ISPs, and hosting providers, we offer bespoke API development to enable seamless provisioning, automation, and customer self-service. Whether you are looking to enhance network scalability, automate service activation, or provide API-driven interactions for your wholesale partners, our team can design and implement solutions that streamline operations and unlock new business capabilities.

At Interstellio IO, We don't merely solve networking issues—we engineer solutions that redefine how networks function. With our unique capability to both design and implement protocols, coupled with decades of industry expertise, we assist businesses in future-proofing their networks, optimising efficiency, and achieving unparalleled reliability. Whether it's network design, automation, API development, or scaling strategies, our consulting services ensure that your business stays ahead of the competition.

## Scale and Capacity Planning

We go beyond traditional capacity planning to ensure your network infrastructure is designed to scale efficiently and support millions of customer services without compromising performance or reliability. Scaling a network isn't merely about increasing bandwidth capacity—it necessitates a profound understanding of control plane scaling, signalling, and service orchestration. Our approach guarantees that your infrastructure can accommodate massive growth, avoiding bottlenecks that often manifest as subscriber numbers rise.

We examine critical network components, including routing protocol scalability, control plane processing limits, and session management capacity, to ensure that your network can handle large volumes of connections seamlessly. Our expertise enables us to identify and mitigate risks associated with signalling storms, convergence delays, and CPU/memory limitations on network hardware. By considering the entire ecosystem—from data planes to automation frameworks and traffic engineering policies—we assist ISPs and service providers in designing networks that are resilient, efficient, and ready for future growth. Whether you're expanding fibre, fixed wireless, mobile, or cloud-based services, our solutions guarantee scalability without unnecessary infrastructure investments, keeping your operations cost-effective and performance-oriented.

## Network Services

We design and implement highly available, scalable, and redundant network services, ensuring that critical infrastructure such as SMTP, web services, load balancers, DNS, and DHCP operates seamlessly and efficiently. By leveraging redundant architectures, we eliminate single points of failure and optimise service reliability, ensuring continuous uptime even under heavy traffic loads. Our approach ensures that these core network services can scale dynamically, adapting to growing demands without compromising performance.

With extensive expertise in Linux and FreeBSD, we draw on decades of experience in deploying and optimising networking services on these platforms. Our profound understanding of kernel-level networking, system tuning, and high-performance packet processing enables us to create robust, efficient, and secure solutions that surpass traditional deployments.

We implement Anycast routing for DNS services, allowing DNS queries to be resolved by the closest available server.

## Network Services cont.

This enhances redundancy, speeds response, and optimises resolution for CDN providers using DNS-based routing like Akamai and Cloudflare. By distributing DNS infrastructure across regions, we ensure optimal content delivery, reducing latency and improving user experience. Our expertise in high-performance DHCP ensures rapid IP allocation and seamless failover for large-scale ISPs and enterprises.

## Deep Protocol Expertise

Understanding network-level protocols at an engineering level enables us to identify, diagnose, and resolve complex networking issues caused by non-standard or non-compliant protocol implementations. In large-scale networks, a single misbehaving vendor device can lead to service disruptions, degraded performance, or intermittent anomalies that are challenging to trace. These issues often stem from incorrect protocol behaviours, incomplete feature implementations, or deviations from industry standards, rendering traditional troubleshooting methods ineffective.

With extensive experience in protocol analysis, debugging, and compliance validation, we can swiftly detect and isolate irregular behaviour, whether it involves BGP inconsistencies, IS-IS misconfigurations, OSPF convergence failures, MPLS signalling issues, incorrect NETCONF responses, or unexpected SNMP polling failures. By examining raw packet data, conducting traffic analysis, and utilising vendor-specific debugging, we trace anomalies back to their root cause and provide solutions that restore stability, ensure compatibility, and prevent future issues. Our capability to design, implement, and debug network protocols at both hardware and software levels provides us a unique advantage, enabling us to deliver insightful solutions that few in the industry can match.

## Cloud Services & Virtualisation

Our extensive low-level experience with KVM and LXC containers on Linux and JAILS on FreeBSD enables deploying efficient, secure, and optimised virtualisation environments.

For enterprise-grade virtualisation and cloud orchestration, the necessary skills and experience are in place to design, deploy, and manage VMware and OpenStack environments. Whether building a scalable private cloud, integrating hybrid cloud solutions, or implementing multi-tenant infrastructure, solutions are tailored to ensure security, redundancy, and automation, meeting the most demanding business requirements.

## About Interstellio IO

Founded in 2020, Interstellio IO began its journey by developing NebularStack and building systems to support a growing customer base with increasingly complex service needs.

We specialise in creating scalable, reliable, and secure tools designed specifically for businesses. Our founding principle of disaggregation empowers customers to select and utilise the components they need in the way that best suits their operations. This flexible approach enables the development of tailored, unrestricted solutions.

With networking, hardware, and software expertise, we are uniquely positioned to deliver innovative solutions that address the specific challenges and requirements of communication service providers (CSPs).

At Interstellio IO, our philosophy is captured by the motto “Ad Astra Per Aspera,” Latin for “through adversity to the stars”. This motto embodies our commitment to resilience, creativity, and collaboration, turning challenges into opportunities to create meaningful and inspiring solutions.

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