Subscriber Management (AAA)

Overview

With a RESTful JSON API, our AAA service seamlessly integrates into existing OSS/BSS systems, offering a scalable solution without concerns about scalability, redundancy or storage. Designed for communication service providers, such as ISPs, it allows them to focus on their core business instead of building and maintaining complex AAA systems.

Production Description

The Subscriber Management (AAA) service is a robust and scalable solution within NebularStack, a continuously evolving cloud-native platform designed to enhance broadband and business subscriber services. Built on a fully distributed microservices architecture, this service guarantees seamless real-time authentication, authorisation, and accounting, while providing high availability, redundancy, and effortless scalability.

By adopting an API-first approach, it integrates seamlessly with OSS/BSS systems, automating subscriber provisioning, policy enforcement, and service monitoring. Its advanced telemetry capabilities provide immediate access to CDR records, data usage logs, and IP history spanning up to five years, ensuring compliance, analytics, and actionable insights.

NebularStack addresses scalability challenges while significantly lowering operational costs. Unlike traditional or open-source systems that necessitate dedicated server infrastructure, software licences, and continuous database support, NebularStack offers a comprehensive, managed solution. ISPs no longer need to invest in highly skilled SQL, Big Data/Time Series, Linux/FreeBSD, or equivalent engineers, nor maintain senior software engineers focused on building and supporting AAA systems. Instead, engineering resources can be redirected towards enhancing services, fostering new offerings, and improving customer experience.

While open-source alternatives may seem cost-effective, they require ongoing support, specialised expertise, and maintenance from their active software contributors—who are often the only individuals fully capable of supporting these projects. Furthermore, these systems lack essential North-Bound APIs, integrated backends, and automated management tools, resulting in higher total ownership costs due to custom development, manual integrations, and operational inefficiencies.

By leveraging Subscriber Management on NebularStack, network and system engineers are freed from the burden of maintaining complex AAA infrastructure, backend databases, and custom integrations. Instead of dedicating resources to server management, troubleshooting open-source limitations, and supporting fragmented systems, these skilled professionals can focus on enhancing network performance, integrating new services, and driving innovation. This shift allows ISPs to reduce operational overhead, accelerate service deployment, and improve overall customer experience, all while maintaining a cost-efficient, scalable, and future-proof subscriber management solution.

No RADIUS dependencies

Our Subscriber Management (AAA) service features a fully in-house built RADIUS, with no reliance on external vendors or open-source projects like FreeRADIUS—a capability that very few AAA solution providers can offer. Most providers depend on open-source communities or third-party vendors for critical support and updates, which limits their ability to guarantee service levels. By owning the entire technology stack, we ensure true end-to-end support, greater reliability, and full control over performance and scalability. This enables us to deliver the service levels we commit to, without the uncertainties of external dependencies and to meet the evolving needs of ISPs and service providers.

Architecture and Key Components

The Subscriber Management (AAA) service is one of the many advanced services within our cloud-native NebularStack platform. The platform is designed with a fully distributed microservices architecture and ensures seamless horizontal and vertical scaling without service disruptions. This architecture inherently provides high availability and redundancy, eliminating single points of failure and enabling uninterrupted service delivery.

NebularStack leverages caching, sharding, and partitioning techniques to optimise data handling and performance. It integrates various backend technologies, each designed for specific data storage needs, ensuring efficient processing and retrieval. These capabilities enable real-time subscriber management, rapid authentication, and high-speed data lookups, even in large-scale deployments.

With its scalable, redundant, and high-performance design, NebularStack provides ISPs a future-proof solution that boosts operational efficiency while adapting to changing network demands.

North Bound Interfaces

Our North-Bound Interfaces are a fundamental part of our API-first design, ensuring seamless integration with any OSS/BSS stack. Crafted for flexibility and scalability, these interfaces offer secure, RESTful JSON APIs, enabling service providers to connect, automate, and extend their systems effortlessly without complex custom development. This approach enhances interoperability, accelerates deployment, and guarantees a future-proof integration framework for evolving network and business requirements.

Multi-Time zone

The platform offers multi-timezone support, allowing data to be displayed in a user's local time zone while ensuring reports can be generated in any time zone. This flexibility facilitates accurate tracking, analysis, and reporting across global operations, ensuring seamless coordination and compliance with regional time settings.

Usage Telemetry

Our Telemetry service for Subscriber Management securely stores active and inactive subscriber records, CDR logs, data usage, and IP logs for up to five years, ensuring instant availability. To maintain multi-timezone accuracy, data is aggregated only into 15-minute intervals, allowing precise tracking and reporting across various regions. The stored data is easily accessible via our RESTful APIs, enabling seamless integration with OSS/BSS systems and external reporting tools. Additionally, DevOps teams can leverage these APIs to create custom reports and analytics, unlocking insights that would otherwise be difficult to attain.

Secure

Lunar, our south-bound RADIUS interface, can optionally operate on your infrastructure with minimal hardware requirements and securely encrypts all communications to our platform. This is particularly advantageous for systems that do not support RADSEC.

24-hour Support

Interstellio IO provides a 1-hour response time for any critical issues 24/7 every day of the year, with 99.99% uptime. Furthermore, Interstellio IO assists NebularStack customers with non-critical issues, including support for new integrations.

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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