

Nokia AAA

Authentication, Authorization and Accounting

In the evolving landscape of mobile, WiFi, cable, and fixed network operators, navigating new business models brings distinct challenges. These include managing complex resource sharing, fostering seamless roaming partnerships, and integrating diverse technologies within their networks. To streamline operations and enhance efficiency amidst numerous solutions and technologies, a centralized Authentication, Authorization, and Accounting (AAA) solution is crucial. Nokia's AAA solution meets these needs by consolidating authentication across all assets onto a unified platform. This not only reduces operational costs but also simplifies management, ensuring a cohesive customer experience across various technologies and networks.

Key benefits

- Scales easily to support nearly unlimited number of subscribers
- Lowers total cost of ownership by supporting multiple networks and applications simultaneously in the same solution
- Accelerates time to market by eliminating custom development to accommodate new use cases
- Enables support for virtually any nonstandard authentication flow and addressing unique business requirements through a highly configurable policy engine.
- Provides multiple integration points, enabling Nokia AAA to meet diverse integration needs effectively.
- Adaptable to meet various architectural and deployment requirements, including geo-redundancy and hardware independence.

Overview

Nokia's award-winning Authentication, Authorization, and Accounting (AAA) solution sets the industry standard in network access control. It supports a comprehensive range of mobile and fixed access technologies, including 5G, LTE, WiFi, Femto/Small Cell, CDMA, GSM/UMTS, DSL and GPON. With its scalability and flexibility, Nokia AAA is trusted by a widely, diverse global customer base. This includes Tier 1 wireless, wireline, and cable operators, as well as global enterprises, and small to mid-size businesses. These customers rely on Nokia AAA for mission-critical access control that precisely meets their unique business needs.

Nokia AAA offers deployment flexibility and scalability. The platform is hardware independent and can, also, be deployed as a CNF or as a VM. This flexibility allows the enterprise or service provider customers to maximize effectiveness and lower operation and maintenance costs.

Robust Policy Management Engine

The Nokia AAA software features an industry-leading policy management engine, powered by the advanced and flexible PolicyFlow scripting language. This intuitive language allows operators to define policy handling for RADIUS and Diameter requests in a protocol-agnostic manner.

With PolicyFlow, operators can finely tune policy decisions down to the attribute level, leveraging complex conditional logic. This includes data from the request itself, subscriber profiles, data files, or cached session data. The versatility of PolicyFlow ensures Nokia AAA can adapt seamlessly to any policy scenario, empowering operators to capitalize on new business opportunities and meet evolving technical requirements without costly software development or extended product release cycles.

Simultaneous Support for Multiple Access Technologies

The Nokia AAA software seamlessly supports multiple access technologies simultaneously, eliminating the necessity for multiple AAA instances to manage fixed and/or mobile services, roaming, convergence, and blended multimedia services. This consolidation dramatically reduces both capital and operating expenses while ensuring a consistent and superior customer experience across converged access solutions such as WiFi Offload.

Compliance with Industry Standards

The Nokia AAA software product is engineered to adhere to industry standards and provides comprehensive support for RADIUS, Diameter, TACACS+, and LDAP protocols. It supports all commonly used variants of the Extensible Authentication Protocol (EAP) for authenticating users and devices. Additionally, the Nokia AAA complies with a wide range of AAA-related standards from IETF, 3GPP, and ITU.

Customizable Universal XML Dictionary

Nokia AAA customers customize their dictionary and vendor specific attributes (VSA) to meet their changing requirements. The dictionary is pre-populated and can be modified to include new attributes which help customers to comply to regulations and industry standards. This capability allows Nokia AAA to quickly adapt to the existing infrastructure reducing costs by leveraging both existing and customizable VSAs and RFCs.

Network Integration Capabilities

With a robust feature set, the product's PolicyFlow and an extensible XML dictionary enable the Nokia AAA to support virtually any RADIUS or Diameter client from any vendor. The software can be configured to utilize any LDAP or SQL-compliant back-end storage technology as a subscriber profile repository. Full integration with HSS and HLRs, such as One-NDS, to support centralization of subscriber profiles. The extensible SOAP/XML framework allows the Nokia AAA to interact with web service-enabled applications, including Operational Support Systems (OSS) and customer care solutions. Fault and performance management systems can monitor the Nokia AAA's health via the product's Enterprise MIB. Control over accounting record formats simplifies integration with billing systems. The Nokia AAA software supports full RADIUS and Diameter proxy functionality for interoperability with partner networks, including protocol translation between Diameter and RADIUS.

Session Data Management

An in-memory session data store is available for tracking details of each session authenticated by Nokia AAA. This data is maintained throughout the session's duration to meet operational needs and business requirements. For example, customer care systems can query the session data store to retrieve details for troubleshooting purposes. Additionally, the Nokia AAA can use this information to enforce limits on the number of sessions a subscriber may have or to implement changes in the subscriber's service profile.

Features

The Nokia AAA is designed with a modular architecture to provide the highest levels of flexibility, performance and availability, and the broadest ranges of scalability.

Flexibility and performance

- Highly flexible policy-management capabilities and a broad toolset of capabilities to enable personalized services make the Nokia AAA the most flexible Authentication Server on the market.
- Extensibility
 - PolicyFlow scripting language for policy definition — no custom software development required
 - Accounting record format is fully configurable
 - Wide array of integration options using LDAP, SQL, SOAP, SNMP, and FTP
- Multiple configurations to support all environments
 - Pre-integrated LDAP directory server
 - Nokia UDM/SDM/HSS for complete centralization of subscriber profiles, including HLR, HSS, MNP and EIR capabilities
 - Adaptable configuration options for integration in any network environment with full support for redundancy and availability requirements
 - Multiple deployment options:
 - Standalone server capability
 - Virtual Machines
 - Containers
- Competitive performance advantage
 - Software optimized for performance: fully multi-threaded application with processor thread tuning to take full advantage of multi-processor systems
 - Intelligent transaction processing of requests maximizes throughput while minimizing duplicate work
 - Server monitoring and statistics tools, including extensive logging capabilities such as Syslog and SNMP

- Complete support for Proxy RADIUS and Diameter; including support for 3GPP standards-defined Diameter interface to provide interoperability with IMS core network components.
- Support for both local and geographical redundancy for high availability and improved resilience
 - Flexible retry/alternate data source logic

Scalability and capacity

- Scalable to support the smallest to largest of networks
- Architecture scales horizontally and vertically allowing the Nokia AAA to support a virtually unlimited number of subscribers

Platform support

- Platform independent supporting any platform that supports Java.
- Support of Network Functions Virtualization and Cloud-native Network Functions
- Available for support of RedHat Linux, Rocky Linux, and Microsoft Windows

Technical specifications

Standards supported

- IETF
- Extensive EAP support
- 3GPP and 3GPP2
- TIA/EIA
- TISPAN

Network Element integration

- MAP GW, SIGTRAN and E1-T1
- Diameter
- TACACS+
- RADIUS
- HTTP2 and XML
- SOAP
- IPv4/IPv6 dual stack support

OSS/BSS integration

- SOAP and web services
- sFTP
- SNMP



Learn more

For more information about Nokia AAA, please visit: www.nokia.com/networks/core-networks/authentication-authorization-and-accounting/#learn-more

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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