AAA (Authentication, Authorization and Accounting)

As today’s network operators — mobile, Wi-Fi, cable, and fixed — introduce new business models they face unique challenges that include complex resource sharing and roaming partnerships, as well as integrating with disparate technologies inside their own networks. With so many point solutions and technologies deployed, the need for an Authentication, Authorization and Accounting (AAA) solution that consolidates authentication for all of these assets into a platform is essential to drive down operating costs and simplify management. The Nokia AAA helps address these requirements, while also ensuring a customer experience that is harmonized across multiple technologies and networks.

Key benefits

• Scales easily to support a practically unlimited number of subscribers
• Lowers total cost of ownership by supporting multiple networks and applications simultaneously in the same solution
• Enables support for virtually any nonstandard authentication flow as well as unique business requirements thanks to a highly configurable policy engine
• Provides a time to market advantage by negating the need for custom development to support new use cases
• Exposes a number of integration points making it possible for Nokia AAA to address a wide range of integration requirements
• Adaptable to meet a wide range of architectural requirements including geo-redundant configurations to address a wide range of integration requirements
Overview

The Nokia Authentication, Authorization and Accounting (AAA) is an award-winning, industry-leading network access control solution for mobile and fixed access technologies including: LTE, Wi-Fi, Femto/Small Cell, CDMA, VoWiFi, DSL and GPON. A highly scalable and flexible carrier grade solution, the Nokia AAA is deployed by a diverse global customer base extending from Tier 1 wireless, wireline, and cable operators to global enterprises and SMBs. All of the Nokia AAA customers depend on this product to provide mission critical access control tailored to their unique business requirements.

Robust policy management engine

The Nokia AAA is powered by one of the most advanced and flexible policy management engines in the industry. An intuitive scripting language known as PolicyFlow is used to define, in a protocol agnostic manner, how the policy management engine processes RADIUS and Diameter requests. PolicyFlow makes it possible to specify precisely how each request is handled, all the way down to the attribute level. Policy decisions can be made based on complex conditional logic that takes into account data from any of the following: information in the request being processed, the subscriber’s profile, data files, or cached session data.

Figure 1. Nokia AAA’s configurable Policy Engine can be tailored to meet a customer’s exact needs.
The PolicyFlow programming language allows Nokia AAA to conform to any possible policy scenario without compromising requirements, or adjustment of design. PolicyFlow makes it possible for customers to adapt the Nokia AAA to address new business opportunities and changing technical requirements, without the need for costly software development, or long product release cycles.

Simultaneous support for multiple access technologies
Multiple access technologies can be supported simultaneously by the Nokia AAA, eliminating the need for multiple AAAs to support fixed and/or mobile services, roaming, convergence and blended multimedia services. This results in a dramatic reduction in capital and operating expenses, while also ensuring that the customer experience is managed consistently across converged access solutions like Wi-Fi Offload.

Compliance with industry standards
The Nokia AAA is designed using industry standards, and has full support for RADIUS and Diameter protocols. All commonly used variants of Extensible Authentication Protocol (EAP) standards are supported for authenticating users and devices. The Nokia AAA is also compliant with many other AAA related IETF, 3GPP, and 3GPP2 standards.

Network integration capabilities
PolicyFlow and an extensible XML dictionary makes it possible for Nokia AAA to support virtually any RADIUS or Diameter client from any vendor.

The Nokia AAA can also be configured to utilize any LDAP or SQL compliant back-end storage technology, such as the Nokia 8661 DS, as a subscriber profile repository. Integration with HSS and HLRs, such as One-NDS, is also fully supported.

Figure 2. Nokia AAA’s Dictionary Editor makes it possible to add support for new VSAs.
An extensible SOAP/XML framework allows Nokia AAA to interact with web service enabled applications such as Operational Support Systems (OSS) and customer care solutions. Fault and performance management systems can monitor the health of the Nokia AAA via the product’s Enterprise MIB. Control over accounting record formats simplifies integration with billing systems. Integration with third-party products for security token, software token and one time password, such as RSA® SecurID® are also supported. Full support for RADIUS and Diameter proxy facilitates interoperability with partner networks, and protocol translation between Diameter and RADIUS is supported as well.

**Session data management**

An in-memory session data store is available for tracking details about each session authenticated by Nokia AAA. Information about each authenticated session is maintained during the life of the session to support operational needs and business requirements. For instance, customer care systems can query the session data store to retrieve details to help facilitate trouble resolution. The Nokia AAA is able to use the information to enforce a limit on the number of sessions a subscriber may have, or to issue a change in the subscriber’s service profile.

Figure 3. Monitoring number of sessions currently authenticated by Nokia AAA.
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 AAA 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
  - Standalone AAA server capability
  - AAA with a pre-integrated One-NDS for complete centralization of subscriber profiles
  - Adaptable configuration options for integration in any network environment with full support for redundancy and availability requirements
- 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
- Deployable on Intel-based rack mount and blade server systems
- Available for the most popular operating systems: RedHat Linux, CentoOs and Microsoft Windows
- Supported by Nokia CloudBand Application Manager (CBAM) - VNF manager
Technical specifications

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

• Network Element integration
  - MAP GW, SIGTRAN and E1-T1
  - Diameter
  - RADIUS
  - HTTP and XML
  - SOAP
  - IPv6 ready

• OSS/BSS integration
  - SOAP and web services
  - sFTP
  - SNMP
  - NetAct

• IT-based platform support for Solaris and Linux-based operating systems

For more information, please visit our website.