

Term of Reference: EthSwitch Middleware Development

This document aims to outline the terms of reference for a consultant to develop and implement a middleware for the EthSwitch's payment solution that will facilitate ease of integration for EthSwitch's participants.

Overview:

EthSwitch Middleware should serve as an advanced integration platform that enables seamless interaction between EthSwitch payment platforms and various legacy systems utilized by financial and payment service providers. This middleware acts as a robust bridge, tackling the complexities and challenges associated with integrating legacy or proprietary systems and facilitating efficient communication across diverse operational environments.

Objective:

The primary objective of EthSwitch Middleware is to streamline the integration process, ensuring that all systems involved can communicate effectively, thereby enhancing operational efficiency, reducing transaction latency, and ensuring robust data governance.

Key Features and Benefits:

1. EthSwitch Middleware should be designed with an architecture that enables horizontal scalability, allowing the system to expand effortlessly in response to growing transaction volumes and user demands.
2. The middleware should offer clearly defined, open APIs to provide a standardized interface between the EthSwitch platform and external systems. This modular design fosters interoperability and simplifies the integration of various applications and services.
3. EthSwitch Middleware should accommodate a wide variety of integration formats, including proprietary protocols, to ensure compatibility with different legacy systems. Additionally, the middleware should feature a comprehensive suite of adapters, connectors, and data translators that fill the technical gaps between the EthSwitch

platform and various legacy systems, ensuring smooth data flow without operational disruptions.

4. The middleware should be designed to adapt to changing business needs, allowing for the easy addition, modification, or replacement of services without disrupting existing integrations. This flexibility ensures that the integration landscape remains robust and consistently aligned with business objectives. It also facilitates the straightforward configuration of integration components, which can be efficiently scaled or replaced as necessary.
5. The middleware should be engineered to efficiently handle high data volumes and transaction loads, ensuring low latency and high throughput. It should also feature horizontal scalability capabilities to support growth in user demand without requiring extensive system overhauls.
6. EthSwitch Middleware should be built on a robust framework and incorporate strong security measures, including authentication and authorization, to guarantee that only authorized users can access specific functionalities, thereby enhancing data security. Furthermore, sensitive information should be encrypted during both storage and transmission to maintain confidentiality and integrity.
7. The middleware should offer comprehensive monitoring, logging, and auditing capabilities, allowing for oversight of the integration landscape and ensuring compliance with regulatory requirements.
8. EthSwitch Middleware should accommodate various industry standards and protocols to ensure seamless integration such as
 - Message-Based Standards: Supports ISO 8583 and ISO 20022 for financial transaction messaging.
 - API-Based Standards: Integrates with REST, SOAP/XML, and JSON-based APIs for a wide range of application interfaces.
 - Asynchronous and Synchronous Processing: Provides support for both asynchronous and synchronous message processing to meet different operational needs.
 - Store and Forward Mechanism: Utilizes a SAF mechanism ensuring guaranteed message delivery, enhancing reliability.
 - Configurable Routing: Enables routing based on single fields or combinations of fields within messages to tailor processing flow to business requirements.
 - Database Agnostic: Compatibility with various databases, including Oracle 11g (and above), Microsoft SQL Server, MySQL, PostgreSQL, and others, facilitating flexible deployment options.
 - Cross-Platform Support:

9. EthSwitch Middleware should accommodate comprehensive monitoring capabilities such as:
 - Transaction Monitoring: Tracks transaction messages, measuring latency and turnaround times for performance assessment.
 - Queue Management: Includes features for monitoring the status of queues to prevent bottlenecks and ensure smooth processing.
 - Resource Health Monitoring: Provides health monitoring of network connections and other system resources, ensuring system reliability and uptime.
 - Log Monitoring Tools: Offers monitoring tools utilizing Elasticsearch and Kibana for real-time log analysis and troubleshooting.

10. EthSwitch Middleware should accommodate Enhanced Security Standards Compliance such as:
 - Mutual TLS Support: Implements advanced security through mutual TLS (Transport Layer Security) 1.3 and JWT (JSON Web Tokens) for secure communications.
 - Message Integrity: Ensures message integrity through checksum generation and verification processes.
 - Auditing Capabilities: All transactions and messages are audited, providing an additional layer of security and compliance with industry regulations.

11. The Ethswitch middle should avail SDKs for popular programming languages such as: Java SDK, Python SDK, C#/.net SDK, Javascript/Node.js SDK.

12. The EthSwitch Middleware should have a detailed documentation typically for developers to quickly understand how to use the upgrade the middleware effectively.

13. EthSwitch Middleware should provide a back-office portal that includes:
 - Role-Based User Management: Allows for the management of user roles and permissions to enhance security and usability.
 - Basic Transaction Monitoring and Reporting: Tools for tracking transaction metrics and generating reports.
 - Transaction Searching and Reporting: Features for searching transaction records and compiling reports.
 - User Reports: Capability to generate reports based on user activities and patterns.
 - Audit Trails: Comprehensive logging of activities for compliance and security reviews.
 - Channel Management Tools: Provides interfaces for managing channel parameters and settings.
 - PKI Certificates and Key Management: Comprehensive management of PKI-related parameters ensuring secure operations.

- Customer/Channel Limit Management: Tools for managing transaction limits based on customer and channel requirements.

Deliverables

1. Detailed design and specification document of the MW
2. Source code for the MW
3. User manual and API documentation

Qualifications and Experience

1. Technical expertise: The consultant should have extensive experience in developing payment solutions and a proven track record of delivering high-quality and reliable systems.
2. The consultant should also deeply understand payment systems, payment processing, and relevant security and data protection regulations. Where necessary, the software company should indicate similar previous works completed.
3. Strong project management skills: The consultant should present a detailed project plan that includes clear timelines, budgets, and deliverables. The company should be able to effectively manage the development and implementation of the payment solution in an agile and collaborative way with EthSwitch.
4. Experienced team: The consultant should have a team of experienced software developers, system architects, and product managers who are knowledgeable and dedicated to delivering the project on time.
5. The consultant should demonstrate experience in ISO messaging protocols such as ISO 20022 and ISO 8583.
6. The consultant should have experience in developing and deploying instant payment systems and other related payment systems.
7. The consultant should adhere to agile methodology and include a team from EthSwitch in the development process, particularly for review activities.
8. The EthSwitch team will act as the product owner throughout the development process, prioritizing the deliverables for the MVP, which aim to deliver within a two-month timeline, with additional functionalities to be added later. Additionally, the product owner will collaborate with the QA and Security teams and certify the product with the Ethiopian National Security Administration (INSA).

Submissions

Financial and Technical Proposals should be submitted electronically to info@africanenda.org & pmo@ethswitch.com before 03rdst January, 2025, and the subject line should read "Development of a Middleware for EthSwitch", and relevant files labelled accordingly. Please note that

incomplete or late applications will not be considered. Only shortlisted candidates will be contacted.