High-Level Design (HLD):

The high-level design outlines the overall architecture and components involved in building the adapter to fetch Pain files from SFX, map the fields with GPS request payload, and use EMS Queue for message communication between the adapter and GPS.

1. SFX Adapter:

- Acts as an interface between SFX and GPS systems.

- Responsible for fetching Pain files from SFX.

- Performs mapping of Pain file fields with GPS request payload.

- Utilizes EMS Queue for communication with GPS.

2. SFX (Sender File Transfer):

- The system that stores and manages the Pain files.

- Provides secure file transfer capabilities.

3. EMS Queue (Enterprise Messaging Service Queue):

- Acts as the messaging middleware to facilitate communication between the SFX Adapter and GPS.

- Serves as a publish-subscribe message queue.

- Enables reliable and asynchronous message delivery.

4. GPS (Global Payment System):

- The system that consumes messages from the EMS Queue.

- Receives the mapped request payload from the SFX Adapter.

- Processes the GPS requests and performs payment transactions accordingly.

Logical Level Design (LLD):

The logical level design provides more detailed information about the components and interactions within the adapter and the integration with SFX, EMS Queue, and GPS.

1. SFX Adapter:

- Implements a file-fetching mechanism to retrieve the Pain files from SFX.

- Parses the Pain files to extract the necessary fields for mapping.

- Maps the fields with the GPS request payload structure.

- Transforms the mapped data into a format compatible with the EMS Queue message format.

- Publishes the transformed message to the EMS Queue for GPS consumption.

2. SFX (Sender File Transfer):

- Stores the Pain files in a secure and accessible location.

- Provides APIs or protocols (such as SFTP or FTPS) for the SFX Adapter to fetch the files.

3. EMS Queue (Enterprise Messaging Service Queue):

- Serves as a reliable and scalable messaging system.

- Publishes and subscribes to messages using a publish-subscribe model.

- Ensures guaranteed message delivery and maintains message order.

- Provides message persistence and fault-tolerant mechanisms.

4. GPS (Global Payment System):

- Consumes messages from the EMS Queue.

- Receives the mapped request payload from the SFX Adapter.

- Validates and processes the received requests.

- Performs payment transactions based on the mapped data.

Technical Design:

The technical design focuses on the specific technologies, protocols, and interfaces used to implement the SFX Adapter, interact with SFX, EMS Queue, and GPS.

1. SFX Adapter:

- Built using a programming language suitable for the integration requirements (e.g., Java, Python, etc.).

- Utilizes SFX APIs, protocols (SFTP/FTPS), or file system access to fetch the Pain files.

- Implements data parsing and field mapping logic to transform the Pain file data into the GPS request payload structure.

- Uses EMS Queue client libraries or APIs to publish messages to the EMS Queue.

2. SFX (Sender File Transfer):

- Provides APIs or protocols (SFTP/FTPS) for the SFX Adapter to fetch the Pain files.

- Ensures secure and reliable file transfer mechanisms.

- Implements appropriate access controls and authentication mechanisms to protect the Pain files.

3. EMS Queue (Enterprise Messaging Service Queue):

- Selects a suitable message queuing system like Apache Kafka, RabbitMQ, or ActiveMQ.

- Configures topics or channels for publishing and subscribing to messages.

- Defines message formats and protocols for communication between the SFX Adapter and GPS.

4. GPS (Global Payment System):

- Defines the specific request payload structure expected by GPS.

- Implements APIs or interfaces to receive messages from the EMS Queue.

- Validates and processes the received messages according to the GPS requirements.

- Executes the payment transactions based on the mapped data.

Note: The provided HLD, LLD, and technical design are based on the given requirement. It's important to consider the specific technologies, integration patterns, and security requirements of the systems involved when implementing the adapter.