Digital Signatures
Decoded Crafting an
In-House E-Signing Microservice

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Agenda

• Introduction
• Demo, Key Takeaways.
• Regulatory Standards
• Case study - iCreditWorks
• Building an in-house e-signing microservice
• Security Measures
• Open-source availability
About Myself

• Working at iCreditWorks - FinTech
• Expertise – Building Microservices and Event driven services.
• Online Contributions – DZone, InfoQ, Baeldung, Personal Blog, Research papers.
• Judge – Industry awards, Hackathons.
• Prior Experience
  • Morgan Stanley, Associated Press, Bank Of America
  • Microsoft Consulting.
Demo

- Native Mobile Application
- Web Application
Regulatory Standards

E-Sign Act

- The act provides a general rule of validity for electronic records and signatures for transactions in or affecting interstate or foreign commerce. The Act ensures that electronic signatures hold the same weight and legal effect as traditional paper documents and handwritten signatures.

- Link to the law

- Record Retention

Compliance measures

- Signed Document
  - Immutable,
  - Integrity and authenticity of the signed document.
  - Uniquely linked to the signatory
Building an in-house e-signing service is not merely a technical decision but a strategic one. Compelling reasons that make a case for building an in-house e-signing service:

- Cost Efficiency
- Reduced External Dependencies
- Enhanced UI Customizations
• Background
• Challenges
• Solution
• Processed documents.
Building an in-house E-Signing microservice – Tech Stack

- Spring Boot with Java
- Generating and Securing PDFs
- Cloud Storage (AWS S3 or Azure Blob)
- Database (MySQL)
Building an in-house E-Signing microservice – APIs

1. Generate documents for signing
2. Post-signature and get a signed document
Building E-Signing microservice –
Generate Document - 1

• Templates
  • Multiple templates to cater to different document types.
  • Templated variables {{CustomerAddressCity}}, {{CustomerAddressState}}, {{CustomerAddressZip}}.

• API Details
  POST {{baseUrl}}/api/e-sign/v1/document/{contentType}
  Request Body
  ```
  {
    "docCode": "GEN-MPN-01",
    "contextId": "LN-1000109-01",
    "localePreference": "en-US",
    "fields": {
      "CurrentDate": "09/03/2023",
      "UserAcctId": "LN-1000109-01",
      "CustomerFullName": "John Doe",
      "CustomerAddressLine": "1100 Fox Run Dr",
      "CustomerAddressCity": "Iselin",
      "CustomerAddressState": "NJ",
      "CustomerAddressZip": "08050"
    }
  }
  ```
Building E-Signing microservice – Generate Document - 1

1. Fetch the template and prepare final content
2. Convert the HTML file into a PDF document.
3. Save Document and metadata
4. Return HTML Response with unique Identifier
Building E-Signing microservice – Post-signature and get signed document -2

- POST {{baseUrl}}/api/e-sign/v1/document/signature/{{eSignDocumentUUID}}/html
  - Request Body (form-Data):
    - Key: "signature"
    - Value: "User’s signed image"
Building E-Signing microservice – Post-signature and get signed document -2

- Document UUID
- User’s signature image
- Regenerate Template with dynamic data.
- Pre-Signed URL

Building E-Signing microservice – Post-signature and get signed document -2

- Customer Signature
- Limited time token
  
  `{{baseUrl}}/v1/document/157f55tt-e8d1-4f6e-90bb-dc5341bc4fa4?token=78902bed-60c2-11ee-acd2-0aa24276fac5`
- Save Document and metadata
- Return Signed Document HTML Response

```
<tr align="right">
  <td colspan="2">
    CAUTION—IT IS IMPORTANT THAT YOU THOROUGHLY READ THE CONTRACT BEFORE YOU SIGN IT.
  </td>
</tr>
<tr align="left">
  <td>{{CustomerSignature}}</td>
  <td>{{SignedDateTime}}</td>
</tr>
```
Security measures in E-Signing

- E-signing Certificate
- Storage Security
- Handshake Protocol
Open-Source Availability

- E-signing microservice’s codebase is available on GitHub.
  
  https://github.com/iCreateWorks/esigning

- Aim is to benefit
  
  • FinTech Start Ups
  
  • Other Star Ups
Conclusion and Q&A
Be in touch

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