

SETTLEWARE™

WhitePapers

The Settleware Secure Forms Solution

Introduction

The Real Estate/Mortgage Industry face an urgent need to reduce costs and provide better services to their customers. One way of achieving these goals is by automating paper-based business processes and securing electronic transactions. Regulations such as the E-Sign Act and UETA open the door to organizations to ensure that their business processes are secure and enforceable. Therefore, these organizations need a complete, secure, cost-effective, easy-to-use, and legally enforceable solution.

Enterprises choosing to convert to electronic record keeping are expected to reap the following direct benefits from implementing a secure forms solution:

- Reduced data entry errors, due to automated checks

- Reduced costs of physical storage space

- Reduced shipping costs

- More efficient business process, resulting in increased customer satisfaction

- Improved analysis of trends and problems, enhancing internal evaluation and quality control

This paper provides an overview of the Settleware Secure Services, Inc. Solution that assists enterprises in the transition of their existing paper forms to secure electronic forms. This paper is intended for business analysts, CTO, CSO, and other technical staff involved in the deployment of forms based solutions for their enterprise.



SETTLEWARE™

WhitePapers

Authentication

Authorization

Confidentiality

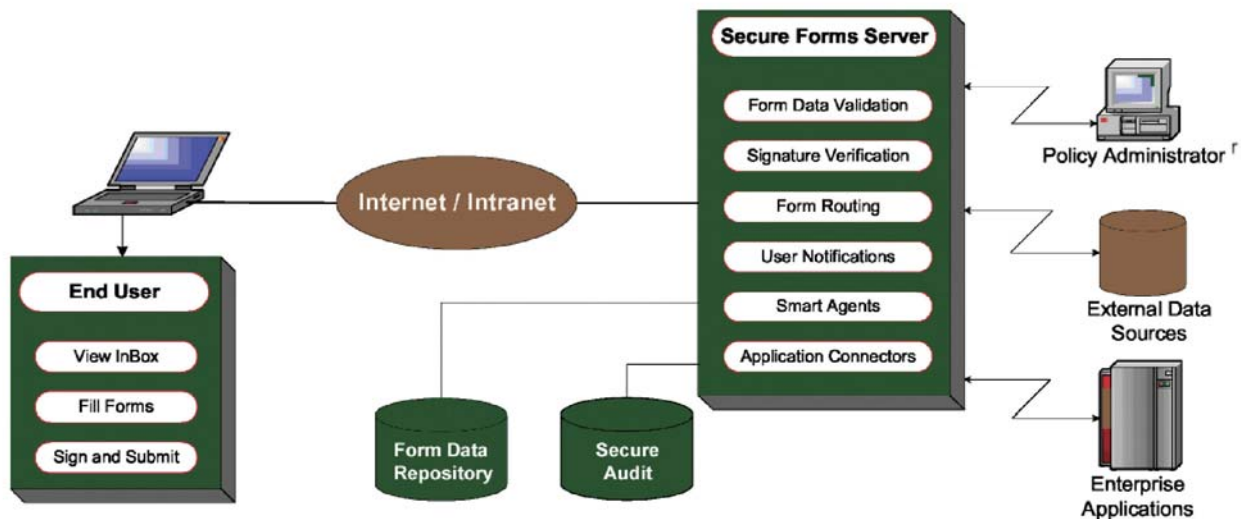
Integrity

Nonrepudiation

Availability

Recognizing that enterprises are using sophisticated desktop publishing tools to design forms, Settleware Secure Services, Inc. developed the Settleware® secure forms solution to enrich existing forms by enabling definition of workflow activities and associated signature management policy. The solution supports standard formats such as Adobe® Acrobat® and HTML forms that can be used for online data entry. Users access electronic forms using a standard web browser, fill in the forms using Adobe Acrobat Reader plug-in and sign the forms using Settleware™ electronic or digital signature tools.

The following picture depicts various components of the solution:



The End User Experience:

End Users access the Settleware secure forms service using a standard web browser and log in using their passwords, tokens or digital certificates. The solution has a built-in access management module, which manages access to forms, form data and other application resources based on the organizational role of the user. The solution supports various forms of authentication including: LDAP, Microsoft Active Directory, RSA SecurID, user id / password and digital certificates. The solution can integrate with other enterprise single sign-on / web access management products as well.

SETTLEWARE™

WhitePapers




Authentication

View In-Box: The user accesses the In-Box, which displays the work items that require processing. The user can check the status of the forms available in the In-Box; view, edit and route the forms. The user may reject a form as well.



Authorization

Fill Forms: The user fills in the form fields using Adobe Acrobat Reader browser plug-in. Upon completion of the form, the user submits the form to the system for further routing. At this time, the system may prompt the user for signature based on the policy defined for the form.



Confidentiality

Sign and Submit: The user affixes either a digital signature or an electronic signature using the Settleware signature tools. The system determines the type of signature based on the policy defined for the form.



Integrity

Digital signature implementation is based on the RSA (Rivest-Shamir-Adleman) and DSS (Digital Signature Standard) Public Key cryptography standards. It utilizes standard X.509 public key certificates and creates a digital signature that is compliant with XML Digital Signature standard. The Settleware™ signature client supports multiple interfaces including Microsoft Crypto API, PKCS#11 and PKCS#12 to enable Smart Cards and other industry standards such as Identrus~ (a financial services industry standard).



Nonrepudiation

The electronic signature function uses a challenge response protocol to generate a unique fingerprint for each transaction. The fingerprint is generated from the secret known to the user and binds it to the transaction using strong cryptographic techniques. The Settleware secure forms server verifies the electronic signature and attests to it by applying its own digital signature.



Availability

Server Side Features and Functionality:

The Settleware® secure forms server manages all aspects of the electronic forms. It allows administrators to add new forms, set security and routing policies, manage users and their access privileges. The server manages end-user access to the system, users' In-Boxes and form data. The main functions performed by the server are listed below:

Forms Data Validation: The secure forms server validates and manages form data filled in by the users. The solution supports multi-level validation, including form level scripting, server level pre-processing and post-processing validation; ensuring that errors are detected and fixed at point of origin, and eliminates expensive error recovery procedures.

SETTLEWARE™

WhitePapers




Authentication

To aid in customization of data validation, pre-processing and post-processing validation call-outs are provided within the solution. For example, if a form needs employee details, a custom pre-processing routine can fetch them from a corporate database based on the user's log-in identifier and pre-fill the form with these details. This type of pre-processing ensures error-free data entry and automated processing by back-end applications. Another important reason for server side validation is to mitigate the security risk of hacking. Server side data validation reduces the chance that 'hackers' can corrupt valuable enterprise information.




Authorization




Confidentiality

Signature Verification: The secure forms server verifies electronic and digital signatures. In the case of digital signatures, the system validates digital certificates used for the signatures, applies a time-stamp and optionally, a notary seal. The server supports several certificate validation protocols including Online Certificate Status Protocol (OCSP), XML Key Management Specifications (XKMS), Certificate Revocation Lists (CRL) published by a Certificate Authority and the Identrus standard.



Integrity

In a deployment where electronic signatures are used, the secure forms server helps enroll users to the system and assigns unique secret signing passwords to the users. When a user signs a form using the assigned signing password, the secure forms server verifies the signature and applies digital signature as a witness to the user's electronic signature. All subsequent signature verification processing is based on the server's witness digital signature. It is important to note that the witness signature captures sufficient information about the electronic signature to support legally binding transactions.



Nonrepudiation



Availability

Form Routing: The secure forms server supports serial workflow routing. The system allows administrators to define routing policy for any type of form defined in the system. For a given form, the administrator may define different tasks that must be performed on the form and associate these tasks with specific organizational roles. The server ensures that all the tasks are executed by prompting end-users to route the form in accordance with the policy definition.

The solution provides essential workflow functionality enabling departmental solutions. The system integrates with enterprise workflow management systems if enterprise-wide full life cycle business process management is required.

User Notifications: Users have the ability to look up their assigned work items in their In-Box. In addition, the system can automatically notify users through e-mail.

SETTLEWARE™

WhitePapers



Smart Agents: Every enterprise has unique business needs. The Settleware solution provides a framework to address these needs via the concept of Smart Agents. Smart Agents allow the enterprise to build in their special application logic, much like that of customized data validation routines. Smart Agents can be triggered based on content of a transaction or other factors. Smart Agents can be used to modify standard routing, signing, and approval procedures. For example Smart Agents can be used to implement a business rule that mandates payments exceeding \$1,000,000 require the CEO's authorization regardless of the transaction type.



Application Connectors: The secure forms server provides a standards based interface to back-end applications using XML and SOAP.



The secure forms server logs transaction data and signature information in a tamper evident audit journal to ensure non-repudiation of transactions. The Secure Forms Audit Journal is a database system that is designed to detect any type of tampering. An optional archival system makes the system tamper proof.



The secure forms solution has a web based operations console. Using the console, a system operator monitors alarms generated by the system. The operator may use the system to view the audit log and generate appropriate reports.



Administering the System:

The system provides a web based administration tool that allows an administrator to define Form Policies and Signature Policies for the organization:



Form Policy: This includes the form routing rules, form data validation rules, and optionally the Smart Agents that must be invoked by the secure forms server. In addition, the administrator can specify form field properties at each routing step – e.g., a field is viewable, editable or locked.

Signature Policy: With every routing step, the administrator can associate a signature activity. The signature activity identifies the type of signature and the form elements that need to be signed by users.


In addition, the system provides GUI tools and web based administration system to manage users, as well as their organizational roles and privileges.

SETTLEWARE™


WhitePapers




Authentication



Authorization



Confidentiality



Integrity



Nonrepudiation



Availability

The major benefits of the Settleware® Solution are:

Cost Reduction: Enterprises can eliminate traditional paper forms and replace them with electronic look-alike forms, resulting in a major cost reduction. Costs associated with paper include: manual re-keying of data, error recovery procedures, physical storage of documents, as well as shipping and printing costs.

Improved Efficiency: Customers, partners and employees can access e-forms over the web. By digitizing a business process, enterprises take a major step in process optimization.

Straight Through Processing: Elimination of errors via sophisticated built-in data validation routines and back end-integration with business applications ensures a fully automated process.

Leverage Investments: The solution is stand-alone and is easy to deploy, and is able to leverage existing enterprise investments in PKI, and Adobe forms.

Enable Legally Binding Transactions and Regulatory Compliance: Enterprises engage in digital approvals and legal operational processes compliant with appropriate regulations. The solution helps organizations comply with legislation such as E-Sign, UETA, and CA AB578

Ease of Use: The solution allows administrators to use existing e-forms or build new eforms based on an organization's paper forms. This helps users adapt to the system quickly. Users quickly learn the "ins and outs" of the system because of its straightforward user interface; smart forms viewers and friendly help functions.

Customers using the Settleware application service model can realize a quick return on their investment due to increases in productivity, reductions in error rates, and cost savings related to the reduction in paper usage (cost of paper, transportation, storage and retrieval).

Summary

The Settleware solution provides a secure, cost-effective, easy-to-use and legally enforceable electronic forms management solution. It helps customers automate business processes to achieve increased productivity, reduced cost of operations, compliance with regulations and increased customer satisfaction.

SETTLEWARE™

WhitePapers




Authentication



Authorization



Confidentiality



Integrity



Nonrepudiation



Availability

Settleware Secure Services, Inc. was founded with a single purpose in mind: to strengthen and protect e-business in the Real Estate/Mortgage Industry. Our focus is providing products that bridge the integration chasm between business applications and security components such as PKI. Our products shelter our customers from the complexity of developing these connections making the process of implementing e-business security simple, cost effective, flexible and complete.

Our product suite represents the next generation of transaction security.

The Settleware service allows the data that is typed into an electronic form to be validated, processed, approved and integrated with back-office systems. Our solution is designed to make business processes more secure and efficient while replacing paper.

Settleware facilitates non-repudiation supporting electronic, digital and signing pad signatures. Support for basic workflow, multiple signatures, customizable signing ceremony and signatory authorization verification features enable organizational process automation.

Settleware access enables authentication and authorization based on established roles and levels of service, single sign-on for multiple web based applications and multiple forms of sign-on including user id/password, RSA SecurID, smart cards and digital certificates.

In conjunction with Settleware access, Settleware privacy provides complete end-to-end transaction security that is easy to manage.

— *tomorrow's future today* —

Trademarks

The Settleware logo is a registered trademark of Settleware Secure Services, Inc.

Other product names used herein may be trademarks or registered trademarks of Settleware or other companies.

Statement of Conditions

SETTLEWARE SECURE SERVICES, INC. PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL SETTLEWARE BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS, OR FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, EVEN IF SETTLEWARE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES ARISING FROM ANY DEFECT OR ERROR IN THIS PUBLICATION OR IN THE EVINCIBLE SOFTWARE.

Settleware Secure Services, Inc. may revise this publication from time to time without notice. Some states or jurisdictions do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

All rights reserved. No part of this work covered by copyright herein may be reproduced in any form or by any means - graphic, electronic or mechanical—including photocopying, recording, taping, or storage in an information retrieval system, without prior written permission of the copyright owner.