

Secure Personal Authentication through Remote System for E-Transactions (SPARSE)

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Problem Statement

How to facilitate user for performing secure e-transactions without compromising security through mobile phone?

What is Needed?

1. Secure methodology of storing and retrieving several user credentials for e-transactions.
2. How to keep away intruders or hackers not to eavesdrop user communication during e-transactions?
3. How to enable trusted agent at remote machine for remote authentication

Need of security for e-transactions in unsanitized environment.

1. To perform E-Transactions such as e-banking, e-payment, e-claims users need to remember too many passwords.
 - ☐ Need to have long unique passwords which will improve security – but complex to remember.
 - ☐ Frequent change of passwords – Security measure, which is again memorization issue
 - ☐ Having common password is a security threat.
 - ☐ Keying passwords in unsanitized environment is prone to Eavesdropping
2. Existing solutions keychain, password bookmarks in browser cache are having security threats and are more vulnerable in unsanitized environment.

Solution

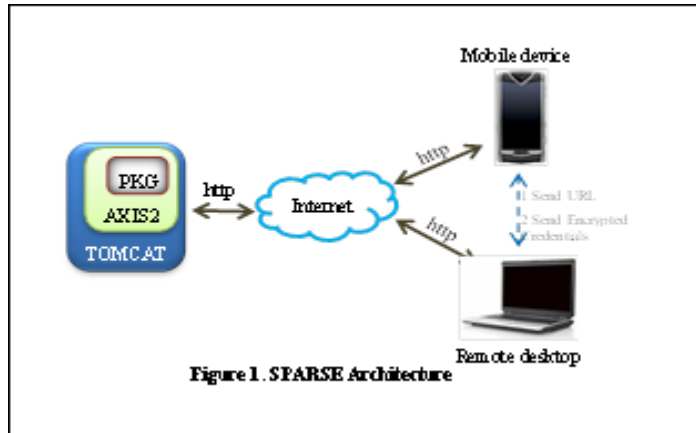
To perform e-transactions from mobile phones through remote desktop in unsanitized environment the following sequence of operations are performed.

- ☐ A priory user's credentials for the various transactions are stored in encrypted (by dynamic pin using IBE) form on the mobile device.
- ☐ At the time of transactions the required credentials are decrypted using dynamic pin and the same are encrypted using public key of the remote device and transmitted through Bluetooth to an agent at remote desktop.
- ☐ Agent decrypts the credentials using its private key and uses it for e-transactions.

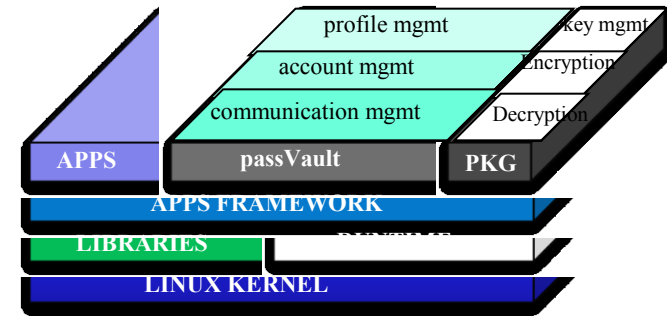
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SPARSE Architecture



Application Deployment on Android



Performance Evaluation Results

Functional ity	Device Type		Average Time in milliseconds
Encryption	Mobile Device		1706
	Remote Desktop		130
Decryption	Mobile Device		1570
	Remote Desktop		122
Key Generatio n	MOBILE DEVICE	PUB_KEY	1739
		PVT_KEY	2344
	REMOTE DESKTOP	PUB_KEY	87
		PVT_KEY	104

Snapshots of SPARSE Application

