IBE vs Traditional Public Key

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Notes

• I’m not talking about details of particular implementations
• I’m talking about intrinsic properties of IBE vs traditional concepts of public key-based authentication
On-line vs off-line trusted box

• With public key, CA can be off-line – not as vulnerable a target as an IBE Private Key Generator (PKG)

• Yes, revocation server might be on-line, but:
  > It’s not as security sensitive a box as a CA or IBE-KS
  > With CRLs, it could be “mostly” off-line
  > Revocation server doesn’t have to have the same public key as the CA, so the revocation server can at most unrevoke, not:
    • Issue bogus certs
    • Impersonate all users
    • Decrypt all encrypted files

How trusted

• CA cannot decrypt messages to correctly registered users
  > Though if CA were compromised, someone could issue bogus certs, and trick users into encrypting with a key a bad guy knows
How easy to bootstrap

• “With IBE, all you need to know is the other side’s name, whereas with PKI you have to know the other side’s public key”
  
  > No! In any sensible PKI-based system, you’d only see the other side’s name
  
  > And in IBE you need to know the domain parameters

• Also, you need a way of authenticating to the PKG
Revocation

- Issues with IBE
  - Compromise of user’s private key
  - Compromise of PKG’s secret

Escrow

- “With IBE, escrow is built-in”
- Yes…but you have the option of doing it any of several ways with traditional public key
  - CC’ing escrow agent
  - Storing private key with escrow agent
There are definitely ways of screwing up PKI

- Putting way too much stuff into certs (privacy issues, etc.)
- Charging lots of money for certs, and needing to get certs from distant entities
- But these aren’t intrinsic to PKI