Federal Agency PKI Overview/KMS

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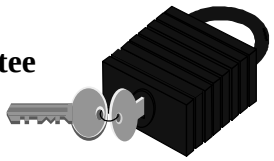

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Government Perspective on Key Management Standards

- Government supports standards which:
  - Are open in nature (non-proprietary)
  - Promote interoperability of PKI products and clients
  - Fully implement X509 certificate path discovery and processing including policy mapping
  - Support two key pairs - signature, encryption
  - Support encryption key recovery (business reasons)
  - Contain appropriate specificity so as to be unambiguous and clear to implementers

Government Perspective on Key Management Standards (continued)

- State of standards today is:
  - Generally sufficient to support single product use within an enterprise
  - Problematic when trying to make different products interoperate
  - Many competing varieties in critical areas (e.g. CMP vs. PKCS)
  - Inconsistent and incompatible implementations even with single standard

Environments in which encryption is needed are diverse

- Intra-agency

  personnel matters, agency management
- Interagency

  payments, account reconciliation, litigation
- Agency to trading partner

  procurement, regulation
- Agency to the public

Current agency use of encryption is very limited

- Many PKI implementations among Federal agencies, but all use digital signatures
  - SSL planned for encryption
- Agencies planning to use end-user PKI encryption in near term include:
  - Federal Aviation Administration (FAA)
  - Social Security Administration (SSA)
  - Department of Defense (already done w/Fortezza)
  - US Patent and Trademark Office

Interoperability Issues

- **Policy interoperability**
- **Technical interoperability**
- **Interoperability among:**
  - **PKI products (CAs, RAs)**
  - **Directories**
  - **Client software (e.g., e-mail)**
  - **Hardware tokens, devices, drivers**

Encryption Key Recovery

- KRDP Phase I very successful
- KRDP Phase II is underway
  - FAA
  - SSA
  - State Department
  - Federal Bridge CA (interoperability)
- Key recovery essential for business reasons

Federal PKI Approach

- **Establish Federal PKI Policy Authority (for policy interoperability)**
- **Implement Federal Bridge CA using COTS (for technical interoperability)**
- **Deal with directory issues in parallel**
  - **Border directory concept**

– **Use ACES for public transactions**

Federal PKI Policy Authority

- **Voluntary interagency group - NOT an "agency"**
- **Governing body for interoperability through FBCA**
  - **Agency/FBCA certificate policy mappings**
- **Oversees operation of FBCA, authorizes issuance of FBCA certificates**

Federal Bridge CA

- **Non-hierarchical hub ("peer to peer")**
- **Maps levels of assurance in disparate certificate policies ("policyMapping")**
- **Ultimate bridge to CAs external to Federal government**
- **Directory initially contains only FBCA-issued certificates and ARLs**

Boundary Conditions

- **Use COTS with "inclusive" architecture**
- **Use X509v3**
- **Support four levels of assurance**
  - **Rudimentary, Basic, Medium, High**
  - **Modeled after Canadian PKI**
- **FBCA use cannot be mandatory**
- **Focus requirements on agencies as certificate issuers, not relying parties**

FBCA Architecture

- **Multiple CAs inside membrane, cross certified**
  - **Adding CAs straightforward albeit not necessarily easy**
- **Solves inter-product interoperability issues within membrane - which is good**
- **Single consolidated X.500 directory**

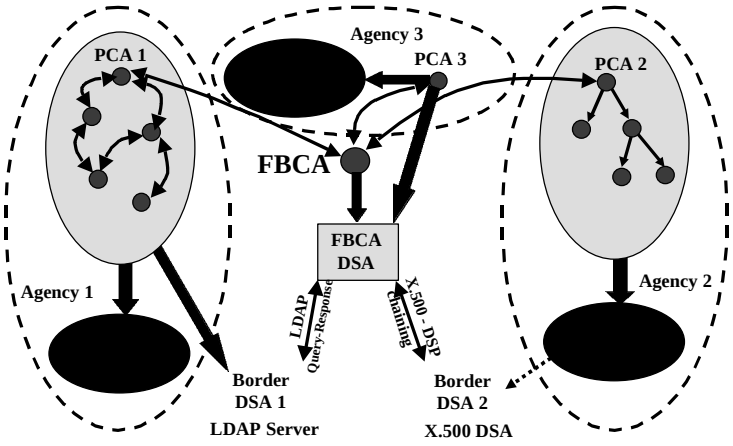
Current Status

- **Prototype FBCA: Entrust, Cybertrust**
  - **Initial operation 2/00**
- **Production FBCA: add other CAs**
  - **Operation by late 00**
- **FBCA Operational Authority is GSA (Mitretek technical lead and host site)**
- **FBCA Cert Policy 12/99 to early 00**
- **FPKIPA Charter 12/99 to early 00**

Border Directory Concept

- **Each agency would have Border Directory for certificates and CRLs**
  - **May shadow all or part of local directory system (allows for agency discretion)**
  - **CAs may publish directly in border directory**
  - **Unrestricted read access**
- **Directory resides outside agency firewall**
  - **chain (X.500 DSP) or LDAP referral to FBCA DSA**

Border Directory Concept



Access Certs for Electronic Services

- **"No-cost" certificates for the public**
- **For business with Federal agencies only (but agencies may allow other uses on case basis)**
- **On-line registration, vetting with legacy data; information protected under Privacy Act**
- **Regular mail one-time PIN to get certificate**
- **Agencies billed per-use and/or per-certificate**

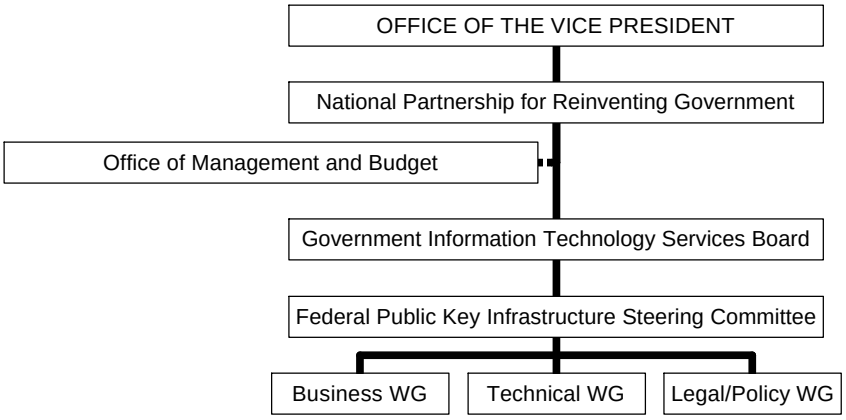
Access Certs for Electronic Services

- **RFP 1/99; bids received 4/99; first award 9/99 (DST), second award 10/99 (ORC), third award 10/99 (AT&T)**
- **Provisions for ACES-enabling applications, and developing customized PKIs**
- **Agencies do interagency agreement with GSA**
- **Certificates available shortly**

Electronic Signatures under GPEA

- **Government Paperwork Elimination Act (October 1998)**
- **Technology neutral - agencies select based on specifics of applications (e.g., risk)**
  - **But full recognition of dig sig strengths**
- **Gives electronic signature full legal effect**
- **Focus: transactions with Federal agencies**
- **Draft OMB Guidance 3/99; final 4/00**

Organization



Abbreviations

- •ACES Access Certificates for Electronic Services
- •ARL Authority Revocation List
- •BCA Bridge CA
- •CA Certificate Authority
- •CMP Certificate Management Protocol
- •COTS Commercial Off-the-Shelf
- •CRL Certificate Revocation List
- •DSA Directory System Agent
- •DSP Directory Service Protocol
- •DST Digital Signature Trust
- •GSA General Services Administration
- •FBCA Federal Bridge CA

Abbreviations (contd.)

- FPKIPA Federal PKI Policy Authority
- GPEA Government Paperwork Elimination Act
- KRDP Key Recovery Demonstration Project
- LDAP Lightweight Directory Access Protocol
- OMB Office of Management and Budget
- ORC Operational Research Corporation, Inc.
- PCA Principal CA
- PIN Personal Identification Number
- PKCS Public Key Cryptography Standard
- PKI Public Key Infrastructure
- RA Registration Authority
- RFP Request for Proposal