FIPS 201
PIV-II Requirements

Ketan Mehta

June 27, 2005

Agenda

❑Identity Proofing

❑Card Issuance and maintenance

❑Logical Credentials

❑Authentication Mechanism

❑Card Topology

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PIV Identity Proofing and Registration Requirements

- ❑ All PIV I control objectives must be met.
- ❑ In addition, following biometrics information must be captured during the identity proofing and registration process.
  - A full set of fingerprints for law enforcement checks
  - An electronic facial image used for printing on the card
  - Two electronic fingerprint for storage on the card

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FIPS 201 REQUIREMENTS

Card Issuance and Maintenance Requirements

Card Issuance

- ❑ All PIV I requirements must be met.
- ❑ Issue a card while a NACI is pending.
- ❑ Revoke the credential if NACI is not completed and favorably adjudicated in six months.
- ❑ Issuer shall perform 1:1 biometric match of the applicant against the biometric included in the PIV Card.

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Card Issuance and Maintenance Requirements

Card Renewal – replace the card when it expires

- ❑ Card shall be valid no more than 5 years
- ❑ No need to repeat the full registration procedure
- ❑ NACI checks must be followed in accordance with OPM guidance
- ❑ Expired card must be collected and destroyed
- ❑ Same biometric data may be reused with the new PIV Card but digital signature must be recomputed with new FASC-N
- ❑ Expiration date of the PIV authentication certificate and optional digital signature certificate cannot be later than the expiration date of the PIV Card

Card Issuance and Maintenance Requirements

Card Reissuance – issue a new card if the old card has been compromised.

- ❑ The entire registration and issuance process, including fingerprint and facial image capture, shall be conducted
- ❑ Old PIV card is revoked
- ❑ Certificate corresponding to PIV authentication key must be revoked
- ❑ OCSP responders shall be updated

Card Issuance and Maintenance Requirements

PIN Reset – unlock the card

- ❑ Agencies determine the number of invalid PIN tries
- ❑ Cardholder’s biometric match the stored biometric on the card

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Card Issuance and Maintenance Requirements

Card Termination – permanently destroy and invalidate the use of the card

- ❑ Card is collected and destroyed
- ❑ Card is revoked
- ❑ Certificate corresponding to PIV authentication key must be revoked
- ❑ OCSP responders shall be updated
- ❑ Cardholder data is disposed of in accordance with the stated privacy and data retention policies of the department or agency.

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Logical Credentials

Mandatory:

1. **Personal Identification Number (PIN)**
   - Something the cardholder knows
   - Used to prove the identity of the cardholder to the card
   - PIN should not be easily guessable or otherwise individually identifiable
   - Meet identity-based authentication requirements of FIPS 140-2 Level 2

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Logical Credentials

Mandatory:

2. **Cardholder Unique Identifier (CHUID)**

- ❑ Something the cardholder possess
- ❑ Used to prove the identity of the cardholder to the external entity such as a host computer system
- ❑ Includes Federal Agency Smart Credential Number (FASC-N) which uniquely identifies each card
- ❑ Accessible from both contact and contactless interfaces – free read
- ❑ Includes expiration date and an Asymmetric Signature field
- ❑ Includes the X.509 certificate which can be used to verify the signature

Logical Credentials

Mandatory:

3. **PIV Authentication Key**

- ❑ Something the cardholder possess
- ❑ Used to authenticate the card and prove the identity of the cardholder to the external entity
- ❑ Key shall be generated on the card and the private key exportation is not permitted
- ❑ PIN must be supplied before the first use
- ❑ Cryptographic operations performed only through contact interface
- ❑ All cryptographic operations using this key are performed on-card

Logical Credentials

Mandatory:

4. **Two biometric fingerprints**
   - ❑ Something that uniquely identifies the cardholder
   - ❑ Used to prove the identity of the cardholder to the external entity
   - ❑ Biometrics only available through contact interface after a PIN is successfully verified.

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Logical Credentials

Optional:

- ❑ **PIV Card Authentication Key**
  - ❑Used to authenticate the card
  - ❑May employ symmetric or asymmetric key algorithms
  - ❑Allow contactless access
  - ❑Cryptographic operations may be performed without explicit user action (e.g., the PIN need not be supplied)
- ❑ **Digital Signature Key**
  - ❑Used to generate digital signatures
  - ❑Key shall be generated on the card and the private key exportation is not permitted
  - ❑Cryptographic operations must only be performed using the contact interface
  - ❑Private key operations may not be performed without explicit user action

Logical Credentials

Optional:

- □ **Key Management Key**
  - □Key may be generated on the card or imported to the card
  - □Must only be accessible through contact interface
  - □Cryptographic operations may be performed without explicit user action (e.g., the PIN need not be supplied)
  - □Key is sometimes called an encryption key or encipherment key
- □ **Card Management Key**
  - □Imported onto the card by the issuer
  - □Is a symmetric key used for personalization or post-issuance activities
  - □Must only be accessible through contact interface

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Logical Credentials

Key Management

- ❑ CA shall participate in the hierarchical PKI for the Common Policy managed by the Federal PKI.
- ❑ Certificates shall be issued under the id-CommonHW and id-CommonAuth policy

X.509 Certificate Requirements

- ❑ CA shall maintain a LDAP directory server that holds the CRLs for the certificates it issues
- ❑ CA shall operate an OCSP server
- ❑ Authority Information Access (AIA) extensions shall include pointers to the appropriate OCSP status responders in addition to LDAP URIs.
- ❑ Certificate associated with PIV Authentication key shall not assert the nonRepudiation bit in the keyUsage extension and must include the PIV Card’s FASC-N in the subject alternative name field.
- ❑ CAs that issue certificate corresponding to the PIV private keys shall issue CRLs every 18 hours
- ❑ PIV Authentication certificate contains FASC-N in the subject alternative name extension; hence, these certificates shall not be distributed publicly via LDAP or HTTP.

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Authentication Mechanisms

- ❑ Three Identity Authentication Assurance levels
- ❑ Authentication using PIV Visual Credentials
- ❑ Authentication using the PIV CHUID
- ❑ Authentication using PIV Biometric
- ❑ Authentication using PIV Asymmetric Cryptography (PKI)

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Graduated Assurance Levels for Identity Authentication

Authentication for Physical and Logical Access

PIV Assurance Level Required by Application/Resource	Applicable PIV Authentication Mechanism **Physical Access**	Applicable PIV Authentication Mechanism **Logical Access** Local Workstation Environment	Applicable PIV Authentication Mechanism **Logical Access** Remote/Network System Environment
SOME confidence	VIS, CHUID	CHUID	PKI
HIGH confidence	BIO	BIO	PKI
VERY HIGH confidence	BIO-A, PKI	BIO-A, PKI	PKI

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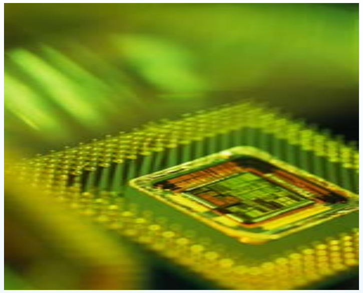
PIV Card Requirements

- ❑ Mandatory
  - ❑ Integrated Circuit to Store/Process Data
  - ❑ One Security Feature to Resist Tempering



- ❑ Interfaces:
  - ❑ Contact (ISO/IES 7816)
  - ❑ Contactless (ISO/IES 14443)
- ❑ Optional
  - ❑ Magnetic Stripe
  - ❑ Bar Code
  - ❑ Linear 3 of 9 Bar Code

In Summary

- ❑ Identification is based on sound criteria for verifying an individual employee’s identity
- ❑ The PIV logical credentials shall contain multiple data elements for the purpose of verifying the cardholder’s identity at graduated assurance levels.
- ❑ Multiple data elements support a variety of authentication mechanisms
- ❑ Specifications to support interoperability
  - ❑ SP 800-73 – *Interfaces for Personal Identity Verification* (card interface commands and responses)
  - ❑ SP 800-76 – *Biometric Data Specification for Personal Identity Verification*
  - ❑ SP 800-78 – *Recommendation for Cryptographic Algorithms and Key Sizes*
  - ❑ SP 800-79 – *Issuing Organization Accreditation Guideline*