Interagency Advisory Board

Meeting Agenda, September 27, 2010

1. **Opening Remarks**
2. **Transportation Worker Identity Credential Program Status Update** *(John Schwartz, TWIC PM)*
3. **Virginia First Responder Authentication Credential Status Update** *(Mike McAllister, Virginia Department of Transportation)*
4. **Sanofi-Aventis Implementation of Digital Identity Using SAFE-BioPharma** *(Peter Loupos, VP Prospective and Strategic Initiatives))*
5. **Identity Business Architecture 2.0—Beyond PIV** *(Corinne Irwin, NASA)*
6. **Update on Government Smart Card Training** *(Randy Vanderhoof, Executive Director of the Smart Card Alliance)*
7. **The Difference Between PIV-I and PIV-C** *(Tim Baldridge, NASA)*
8. **Closing Remarks**

Federal CIO Council
Information Security and Identity Management Committee

Identity, Credential, and Access Management

The Difference Between PIV-I and PIV-C

September 27, 2010

Tim Baldridge
AWG Co-Chair
Office of the CIO
NASA
tim.baldridge@nasa.gov

PIV-I for NFI (Section 2.1) Defines

- **PIV Interoperable Card –** an identity card that meets the PIV technical specifications to work with PIV infrastructure elements such as card readers, and is issued in a manner that allows Federal government relying parties to trust the card.

- **PIV Compatible Card –** an identity card that meets the PIV technical specifications so that PIV infrastructure elements such as card readers are capable of working with the card, but the card itself has not necessarily been issued in a manner that assures it is trustworthy by Federal government relying parties.

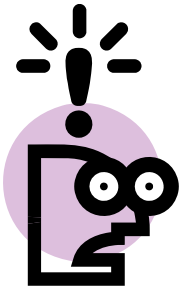
Reality…

- In PIV-I for NFI
  - The term “PIV-C” is never used
  - The word Compatible appears but 12 times
  - And the word “Compatible” never appears without “Interoperable” except for the definition listed previously
- In NIST SP 800-73-3
  - There are exactly four references in section 3.3, Inclusion of Universally Unique IDentifiers (UUIDs)
  - There is no distinction between “PIV-I” and “PIV-C”
- The terms “PIV Compatible” or “PIV-C” are not referenced the FBCA Certificate Policy or any other normative source

Let Us Be Clear…

- PIV and PIV-I Are Well Defined !!!

- Nobody Knows What PIV-C Is, Because There Are No Documented Specifications For “PIV Compatible”



FBCA CP To The Rescue…

- Ten policies specified at six different levels of assurance
- Six increasing, qualitative levels of assurance:
  - Rudimentary
  - Basic
  - Medium
  - PIV-I Card Authentication
  - Medium Hardware
  - High

FBCA CP 3.2.3.1 Authentication of Human Subscribers (Medium Assurance)

- Identity shall be established by in-person proofing before the Registration Authority, Trusted Agent or an entity certified by a State or Federal Entity as being authorized to confirm identities; information provided shall be verified to ensure legitimacy. A trust relationship between the Trusted Agent and the applicant which is based on an in-person antecedent may suffice as meeting the in-person identity proofing requirement. Credentials required are one Federal Government-issued Picture I.D., one REAL ID Act compliant picture ID, or two Non-Federal Government I.D.s, one of which shall be a photo I.D. (e.g., Non-REAL ID Act compliant Drivers License). Any credentials presented must be unexpired.
- Clarification on the trust relationship between the Trusted Agent and the applicant, which is based on an in-person antecedent identity proofing event, can be found in the *"FBCA Supplementary Antecedent, In-Person Definition" document.*
- **For PIV-I, credentials required are two identity source documents in original form. The identity source documents must come from the list of acceptable documents included in *Form I-9, OMB No. 1115-0136, Employment Eligibility Verification. At least one document shall be a valid State or Federal Government-issued picture identification (*ID). For PIV-I, the use of an in-person antecedent is not applicable.**

FBCA Supplementary Antecedent, In-Person Definition

- An Antecedent event is an in-person proofing event that occurred previously and may suffice as meeting the in-person identity proofing requirements.

- http://www.idmanagement.gov/fpkipa/documents/FBCA_Supplementary_Antecedent.pdf

What Does This All Mean?

- It Means Relying Parties (RPs) Are In Control
- RPs Decide If
  - Assurance Levels Provide Sufficient Granularity
  - Policies Provide Sufficient Granularity
  - Issuer (Name) Constraints are Required
  - To Accept Alternate Form Factors (HW & SW)
- There Are Ample Controls In the Trust Framework For RPs To Admit Only Authorized Accesses
- Bottom Line – A Card With Certificates That Map To id-fpki-certpcy-mediumHW-CBP Is Just That – No Need Or Advantage To Call It PIV-C.

QUESTIONS

Identity, Credential, and Access Management

BACKUP

Non-Federal Issuer (NFI) Trust Governance

- The Federal Bridge Certification Authority (FBCA) Certifies NFIs For Use By Federal Relying Parties
- The FBCA Certificate Policy (CP) Contains The Detailed Requirements That Those NFIs Must Meet
- There Is No Intent Or Expectation For Trust By Federal Departments And Agencies Of Cards Or Tokens Where Certificates Are Issued Outside The Federal PKI Policy Authority

Normative PIV-I and PIV-C Reference Documents

- http://www.idmanagement.gov/fpkipa/documents/FBCA_CP_RFC3647.pdf
- http://www.idmanagement.gov/fpkipa/documents/pivi_certificate_crl_profile.pdf
- http://www.idmanagement.gov/documents/PIV_IO_NonFed_Issuers.pdf
- http://www.idmanagement.gov/documents/PIV-I_FAQ.pdf
- http://csrc.nist.gov/publications/drafts/800-63-rev1/SP800-63-Rev1_Dec2008.pdf

PIV Cards

- Personal Identification Verification Cards
  - Cornerstone Credential For All Security Controls For Both Information Resources And Facilities Protection
  - In HSPD-12 Federal Departments And Agencies Are Required To Issue PIV Cards to Permanent Government Personal And Contractors
  - Issued ONLY By Federal Entities
  - May Be Relied On By Federal And Non-Federal Entities
  - Background Investigation – Minimum NACI
  - Assert Federal Common Policy Framework (FCPF) Certificate Policy OIDs for PIV

PIV-I … PIV Interoperable Cards

- Personal Identification Verification – Interoperable (by Non-Federal Issuers – NFI) Cards
  - Cornerstone Credential For All Security Controls For Both Information Resources And Facilities Protection
  - Intended Primarily For Issuance By Non-Federal Entities
  - May Be Relied On By Federal And Non-federal Entities
  - Identity and Affiliation Certainty Equivalent to PIV
  - No Issuer Background Investigation of Cardholders
  - Asserts Federal Bridge Certificate Authority (FBCA) Certificate Policy OIDs for PIV-I

PIV-C … PIV Compatible Cards

- A PIV-C (Personal Identity Verification – Compatible) Card meets the PIV technical specifications so that PIV infrastructure elements such as card readers are capable of working with the card, but the card itself has not been issued in a manner that assures it is trustworthy by Federal government Relying Parties (RPs).
  - Sole Allowance To Trust Existing Legacy Issuance By Non-Federal Entities Who Otherwise Meet FBCA CP Requirements Except PIV-I
  - May Be Relied On By Federal And Non-federal Entities Up To The Extent Permitted By FBCA CP For Hardware Tokens
  - No Issuer Background Investigation Of Cardholders
  - By Definition PIV-C Must Not Assert or Map to FCPF PIV or FBCA PIV-I Certificate Policy OIDs

PIV Interoperable for Non-Federal Issuers

- Is not a replacement for PIV
- Requires the same enrollment process as PIV
- Does not assert any level of individual trustworthiness
  - No Background Investigation
  - Only I-9 Document Verification
- In a three factor (have, know, are) authentication PIV-I is a very high confidence identity assertion (Level 4)
- No need to revoke cards when individuals leave an Agency, thus relieving the relying Agencies of temporary credential costs and the need to recover credentials at contract completion or other separating events

PIV-I Hardware Subject DN

- PIV-I Hardware certificates shall indicate whether or not the Subscriber has an Organizational Affiliation by taking one of the following forms:

  - **For certificates with an Organizational Affiliation:**
  - cn=*Subscriber's full name*, ou=*Affiliated Organization Name*,{*Base DN*}

  - **For certificates with no Organizational Affiliation:**
  - cn=*Subscriber's full name*, ou=Unaffiliated, ou=*Entity CA's Name*,{*Base DN*}

PIV-I Card Authentication Subject DN

- PIV-I Card Authentication certificates shall indicate whether or not the Subscriber has an Organizational Affiliation by taking one of the following forms:

  - **For certificates with an Organizational Affiliation:**
  - serialNumber=*UUID*, ou=*Affiliated Organization Name*,{*Base DN*}

  - **For certificates with no Organizational Affiliation:**
  - serialNumber=*UUID*, ou=Unaffiliated, ou=*Entity CA's Name*,{*Base DN*}

One Note…

- NIST 800 76-2
  - Biometric Data Specification for Personal Identity Verification
  - Revision is in work at NIST – Public Draft expected.
  - Normative Specification for inclusion of UUID in CBEFF header

The Realized Value of Federal PKI Infrastructure

- https://www.idmanagement.gov/documents/RealizedValueFederalPKI.pdf

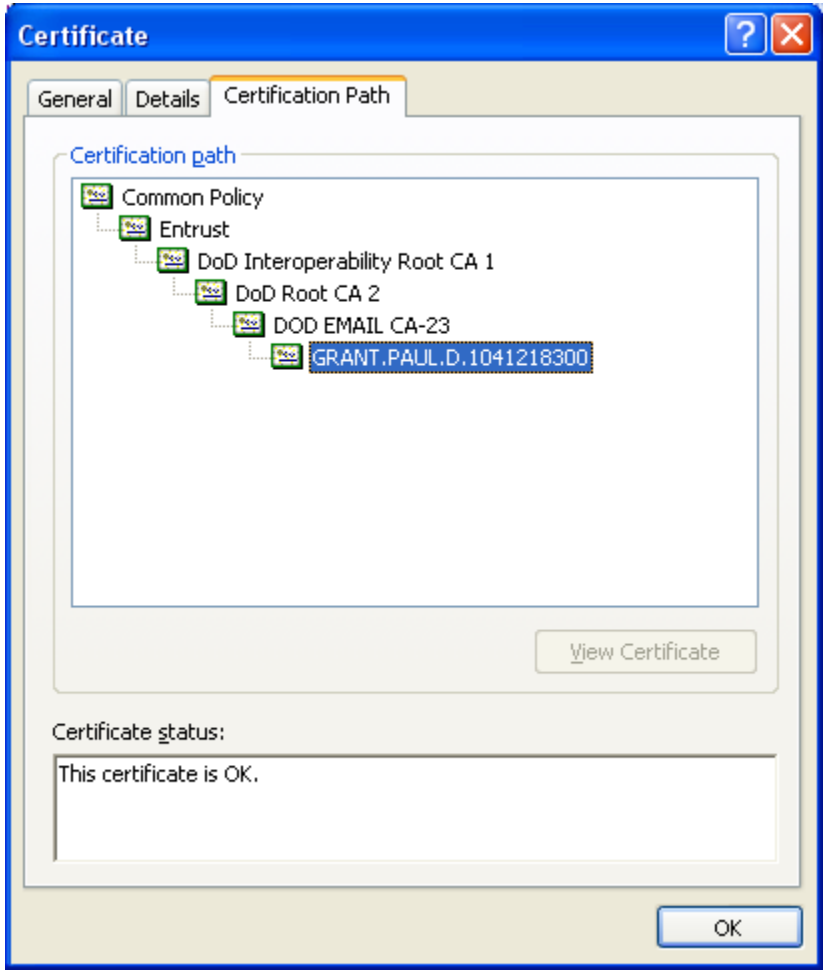
Hitchhiker's Guide to PKI…

- Evaluate forward Trust Path
  - Certificate Policies
  - Policy Mapping
- Check for Revocation of each Certificate in Chain
- Evaluate Root Certificate
  - Assurance Level (Certificate Issuance Policy)
  - Purpose (Certificate Application Policy – EKU)
- Cache Results

http://csrc.nist.gov/groups/ST/crypto_apps_infra/csor/pki_registration.html

2.16.840.1.101.3.2.1.3.1	id-fpki-certpcy-rudimentaryAssurance
2.16.840.1.101.3.2.1.3.2	id-fpki-certpcy-basicAssurance
2.16.840.1.101.3.2.1.3.3	id-fpki-certpcy-mediumAssurance
2.16.840.1.101.3.2.1.3.4	id-fpki-certpcy-highAssurance
2.16.840.1.101.3.2.1.3.5	id-fpki-certpcy-testAssurance
2.16.840.1.101.3.2.1.3.12	id-fpki-certpcy-mediumHardware
2.16.840.1.101.3.2.1.3.14	id-fpki-certpcy-medium-CBP
2.16.840.1.101.3.2.1.3.15	id-fpki-certpcy-mediumHW-CBP
2.16.840.1.101.3.2.1.3.18	id-fpki-certpcy-pivi-hardware
2.16.840.1.101.3.2.1.3.19	id-fpki-certpcy-pivi-cardAuth
2.16.840.1.101.3.2.1.3.20	id-fpki-certpcy-pivi-contentSigning
2.16.840.1.101.3.2.1.3.6	id-fpki-common-policy
2.16.840.1.101.3.2.1.3.7	id-fpki-common-hardware
2.16.840.1.101.3.2.1.3.8	id-fpki-common-devices
2.16.840.1.101.3.2.1.3.13	id-fpki-common-authentication
2.16.840.1.101.3.2.1.3.16	id-fpki-common-high
2.16.840.1.101.3.2.1.3.17	id-fpki-common-cardAuth

Example Forward Trust Path



- Policy Identifier- Leaf
  - 2.16.840.1.101.2.1.11.9
  - id-US-dod-mediumhardware
- Policy Mapping
  - Issuer Domain
    - 2.16.840.1.101.3.2.1.3.12
    - id-fpki-certpcy-mediumHardware
  - Subject Domain
    - 2.16.840.1.101.2.1.11.9
    - id-US-dod-mediumhardware
- Policy Identifier – Root
  - 2.16.840.1.101.3.2.1.3.7
  - id-fpki-common-hardware

- Federal Departments and Agencies as RPs are solely responsible for discriminating between PIV, PIV-I and Medium Hardware PKI certificates issued under FCPF and FBCA in determining access to information resources and facilities.

- PIV, PIV-I and Medium Hardware PKI certificates issued under FCPF and FBCA are intended to provide the highest practical remote network authentication assurance (Level 4 NIST SP 800-63-1 draft)

Mapping Certificate Policy to Access Control

- http://technet.microsoft.com/en-us/library/dd378897(WS.10).aspx

- **Authentication Mechanism Assurance**
  - **Feature of** Windows Server 2008 R2 Directory Services
  - When a certificate-based logon method (for example, smart-card logon) is used, and authentication mechanism assurance is enabled, an additional group membership is added to the user's access token during logon

- HSPD-12 Logical Access Authentication and Active Directory Domains.doc
- http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=b86d8fe2-a76a-4692-9983-5ee65f0f4e88

Take Home

- PIV and PIV-I Assurance More Than Some Confidence IF You…
  - Validate Digitally Signed Objects
  - Validate Certificates to a Qualified Trust Anchor
  - Validate All Certificates In Trust Path Are Not Revoked
  - Satisfactory Dept. & Agency Initial or Reciprocal BI Check for PIV-I

Take Home (continued)

- Important PIV-I Internal Efficiency Gains
  - Reliable, Effective And Convenient Enrollment And Card Issuance For Transient Personnel To Establish Identity Certainty For Both Federal And Non-federal Relying Parties
  - The Rigor Followed For Single Card Issuance Permits Card Use For A Multitude Of Federal And Non-federal Applications And Facilities Access
  - Departments And Agencies Use Of OPM For Background Investigations And Reporting Adjudication Results To The Opm Central Verification System (CVS) Offers A Central Repository For Reciprocity Reduces Bi Cost And Time As Individuals Move Among Departments And Agencies