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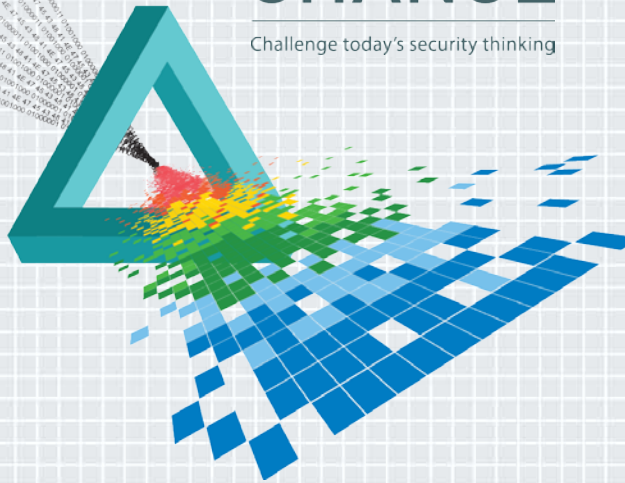
CHANGE
Challenge today's security thinking



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Identity Proofing – Blinding the Eye of Sauron

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Identity Proofing 101

- A process that vets and verifies the information (e.g. identity history, credentials, documents) that is used to establish the identity of a system entity
- Considerations
  - Remote vs. In-Person
  - Document collection and verification
  - Required data elements
  - Personally identifiable information
  - Maintenance and protection of information

Identity Proofing Components

- Identity Resolution

- Identity Validation

- Identity Verification

Identity Resolution

- Uniquely distinguishing an individual from all other people in a given context
- Requires
  - Collection of attributes
  - Minimal amount of data that allows uniqueness to be determined
  - Consent to use attributes

Ensures that the smallest set of attributes have been resolved to a unique individual in a given population

Identity Validation

- Establishing the accuracy of the identity information via:
  - An authoritative source
  - Corroborating different sources of information if no single authoritative source is available

Ensures that identity information is accurate and timely

Identity Verification

- Confirming that the identity information provided relates to a specific individual

Ensures that the identity information is not being fraudulently used

Identity Proofing Methods

Remote Proofing			
Pros	**Cons**	**Resolution**	**WEAK**
Convenient	KBA Risk	**Validation**	**WEAK**
Low Cost	Easy impersonation	**Verification**	**WEAK**

In-Person Proofing			
Pros	**Cons**	**Resolution**	**STRONG**
High resolution	Inconvenient	**Validation**	**Medium**
Availability of biometrics	Costly	**Verification**	**Medium**

Where Does This Put Us?

- ID Proofing is still a challenge for many organizations
- Every organization is doing it themselves
- Users are proofed multiple times
- Your Proofing! = My Proofing
- Customers are increasingly concerned about their privacy
- Federated environments are decreasing the number of stores of identity information
- Hub architectures are reducing the barrier to federated identity

Federated Identity vs Hub Solution

Current State

- Requires agencies to integrate with multiple Identity Service Providers (IDPs), each independently paying for authentication services
- Limited LOA 2 & 3 credentials due to limited demand

The Solution (Connect.Gov)

- Centralized interface between agencies and credential providers – reduces costs and complexity, speeds up integration timeline for new IDPs
- Enhanced consumer privacy and experience; user does not have to get a new credential for each agency application
- Decreased Federal government authentication costs

But...

So What Are We Doing?

- Reviewing ways to establish and authenticate identity
  - Recent technology development
  - Failures in remote proofing
- October 17, 2014 Executive Order Implementation Plan
- Focus on identity proofing and identity assertions that are strong, reliable, and privacy enhancing
- NIST SP 800-63 released for review/comments:
  - http://csrc.nist.gov/groups/ST/eauthentication/sp800-63-2_call-comments.html

How Are We Building It?

Meaningless But Unique Number (MBUN)

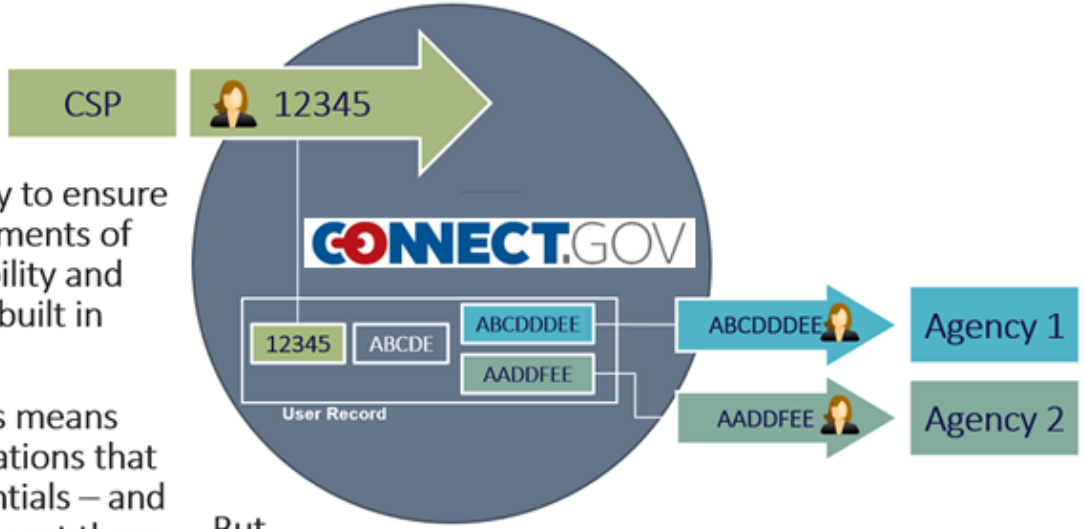
- Unique among the CSP's and users
- Protocols use an anonymous value as a requirement for the Subject
- Used to describe the value provided by CSPs as the Subject of the Authentication Response
- Specified by CSP

Persistent Anonymous Identifier (PAI)

- NOT derived from MBUNs
- Created with the Java SecureRandom class
- Stored with MBUNs = Mapping
- Generated by Broker
- ID Broker Store: MBUN, iPAI
- Federation Manager Store: iPAI, rpPAI

Privacy By Design

- Designed specifically to ensure that privacy requirements of anonymity, unlinkability and unobservability are built in from the start
- In simple terms, this means that private organizations that issue citizens credentials – and the agencies that accept them – will have no way to track where citizens use them.



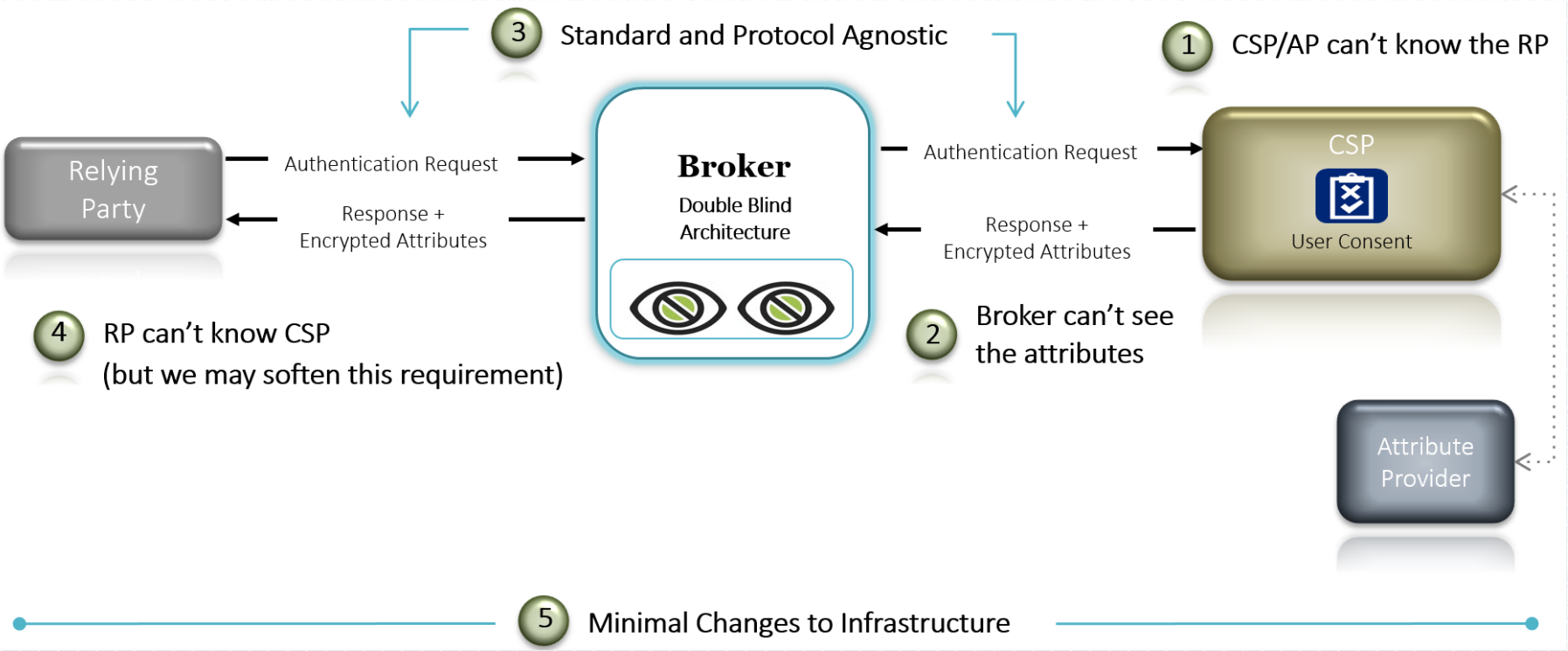
But…

- Attributes flow freely through FCCX
- If they didn't, RP's would get them on their own (inconsistently)
- "Let the RP Figure It Out" is the wrong answer!

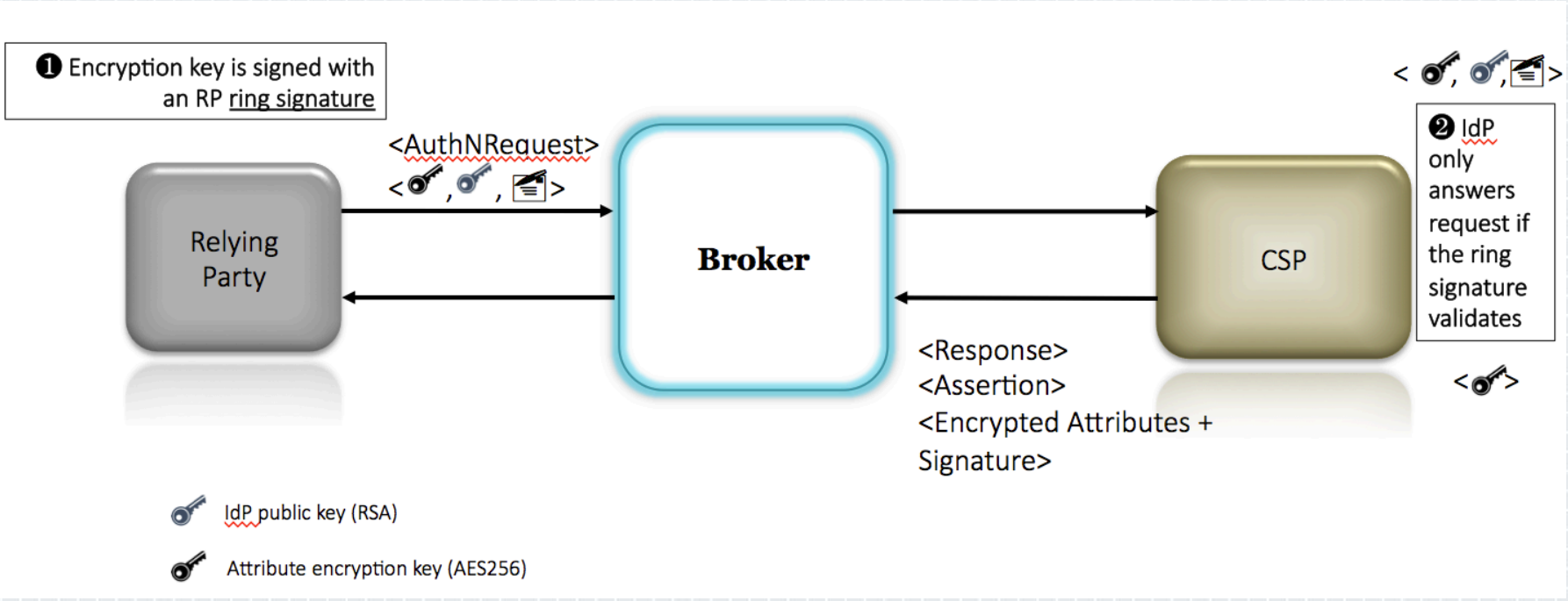
There Is More To Do

- Broker infrastructure has access to attribute values sent from CSPs
- Identity protocols are based on explicit trust and knowledge of endpoints
- Encryption and signing requires knowledge of public keys = no longer blind
- Attributes are not persisted, but in-memory processing is an attack vector for malicious actors
- Double Blind is OK for data-at-rest, but not for data-in-motion
- Attribute Encryption is not enough, risk remains where the Broker is Honest-But-Curious, enforced only through policy. A malicious actor can bypass these controls and obtain read/write access to attribute data.
- Impersonation Attacks

A Desired Hub Architecture



And A Potential Secure, Privacy Flow



Summary

- Identity Proofing
  - Identity Resolution
  - Identity Validation
  - Identity Verification
- Minimize the amount of data collected
- Address privacy concerns
- Leverage hub architectures

Applying the Blinders

- Analyze identity proofing requirements and the level of risk associated with what is being protected
  - Are they commensurate?
- Identify extraneous identity proofing requirements
- Pinpoint critical data that may be targeted – Avoid honeypots
- Implement mitigating elements, surveillance tools
- New standards and profiles
- Updated cryptography APIs
- Increased market adoption

Questions?