Modern Auth & SSO for Networkers

Making sense of modern auth suites for those that miss the good ol' days of RADIUS and TACACS+ :)

Josh Green – Leader, Duo Security
Aaron T. Woland – Distinguished Engineer, Security

BRKSEC-2144

$ whoami

Cisco role: Distinguished Engineer, Security

Unofficial title:
“Cisco History Professor”

Experience: Old enough to wonder how I have been doing this for >30 years

Fun fact 1: Father of 5 daughters

Fun fact 2: Oldest works for Cisco now! Youngest is 3!

Fun fact 3: Just completed Cybersecurity Master’s Degree from SANS Institute (Oct 2024)

$whois Josh?

Cisco role: Leader, Duo TME

Experience: Over 15 years industry experience. Background in identity and access management (and molecular biology).

Fun fact 1: Pilot and space nut

Fun fact 2: Polyglot

Fun fact 3: Skier

Cisco Webex App

https://ciscolive.ciscoevents.com/ciscolivebot/#BRKSEC-2144

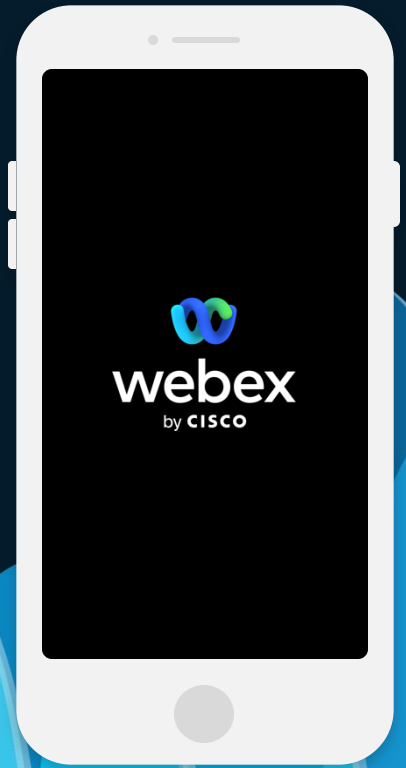
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
3. Install the Webex App or go directly to the Webex space
4. Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until November 15, 2024.



cisco Live!

Please fill out the survey

Drop your email in the comments – we WILL respond!

Important: Hidden Slide Alert

Look for this “For Your Reference” Symbol in your PDF’s

There is a tremendous amount of hidden content, for you to use later!

For Your Reference

ABSTRACT

For Your Reference

Modern Auth and SSO explained for Network Engineers

AAA: Authentication, Authorization & Accounting does not mean “RADIUS”.

Those of us in Network Security are usually familiar with 802.1X and authenticating to networks for wireless, wired, and even VPN. AAA is a principle, not a product.

The concepts are universal and still apply when you hear the “new” authentication protocol types like: OAuth, SAML, OIDC, FIDO, etc. This session will focus on explaining modern web-based authentication protocols & teaching about them in a way that compares & contrasts them to network security authentication methods. In other words: come learn about the latest in authentication protocols and how to understand them with your networking background. If you know all about SAML & OAuth already, but don’t understand 802.1X or EAP – this session is also for you!

Expert leaders from Cisco's Duo Security business, Aaron Woland and Jeff Groesbeck, will entertain you while educating you on this important and growing area of security.

Agenda

- Introduction
- History & AAA
- Enter: Single Sign On
- SAML
- OAuth & OIDC
- WebAuthN & Passkeys
- Gotcha’s
- ID Needs Shades in Future
- Conclusion

As the unofficial “Cisco History Professor” I tend to explain technology with a bit of a history lesson, so you can understand how we got to where we are.

-Aaron T. Woland
random guy in IT since the Dinosaurs

A Brief History of Identity

Tribes

Most people never left their village. Identity was easy. Everyone knew everyone. The identity "data breach" was impossible.

Wax Seals

Originating in China, delicate wax seals provide authentication AND evidence of message tampering

Encryption

The first known use of codebooks to encipher messages between parties.

Encryption was born on paper.

Biometric ID

The first photo ID concept was created.

~12k Years Ago | 5000BC | 1600-1064BC | ~200BC-400AD | 1379AD+ | 1677AD | 1876AD

Agriculture & Villages

As people created larger settlements, it became impossible to know everyone. Trusted 3rd parties can make introductions.

The first stamped signature appears in Sumeria.

Passwords

Roman soldiers are given nightly-changing "watchwords" to identify travellers arriving at garrisons after dark.

MFA

English Parliament requires both signatures and wax seals on official documents.

“Authentication, Authorization & Accounting is an age-old security principal that should apply to all things Security related”

- Aaron T Woland, pompous windbag

AAA

I'd like 40K from Chuck Robbins' Account

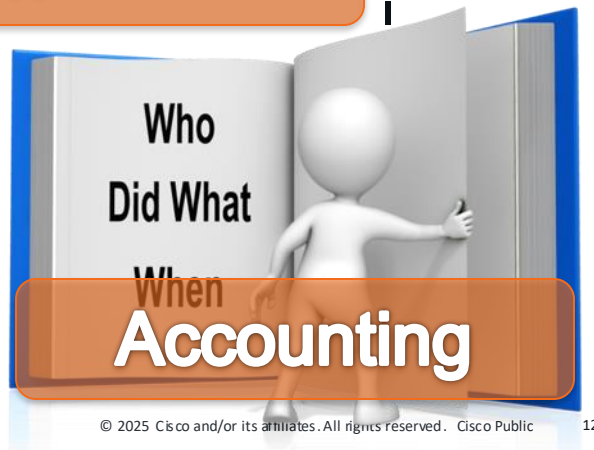
Do You Have Identification?

Yes, I Do. Here it is.

Authentication

Sorry, Aaron Woland is not Authorized

Authorization



Accounting

AAA in a networking world

- In “our” world, we have thought of 2-types of AAA:
  - Controlling access to networks.
    - Dial-up (*yes, I’m that old*)
    - 802.1X
    - Remote Access VPN
  - Or access to our terminals / CLI’s (i.e.: TACACS+)
- Basically, we want to know who and what is connecting to your network or CLI before granting access, and let that access be specific.

Network access AAA

ISE is sort of like the “airport security” of the network, if you will.

AuthN

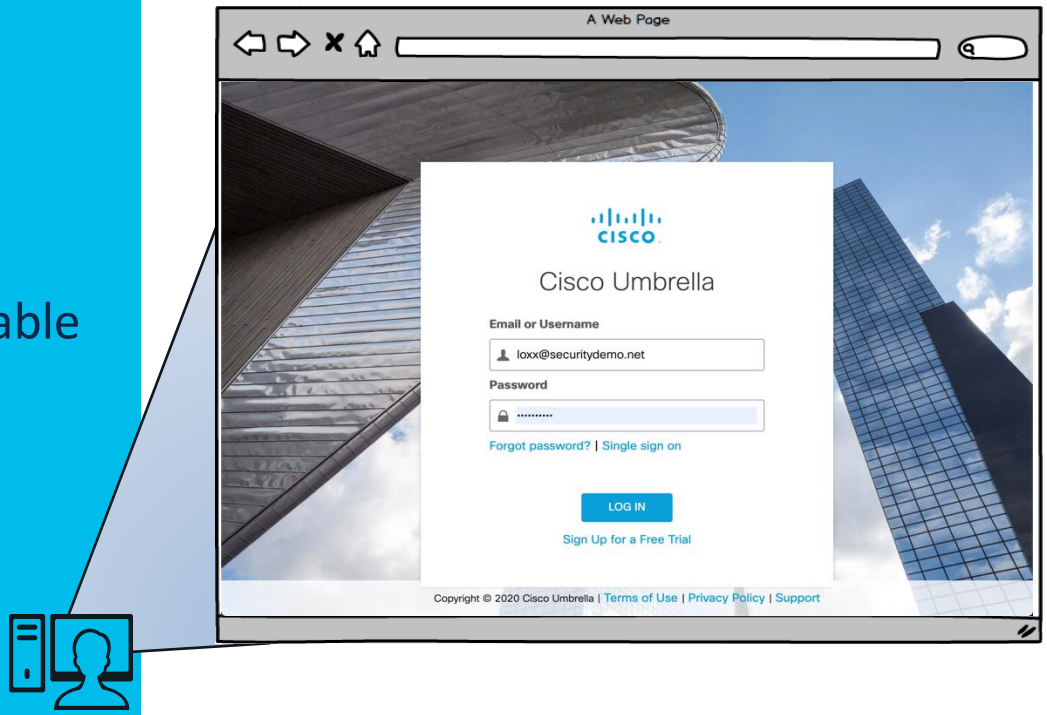
- It validates who you are by checking your credential (username/password/certificate) and that the credential is trusted.
  - Did the username/password match
  - Was the certificate signed by a trusted authority
  - Proof of possession
- It validates the device is allowed

AuthZ

  - Is it an allowed type (Profile)
  - Does it meet the security requirements (Posture)

Application Access

- While WE spend so much time focused on network authentication:
- The same principals are applicable to applications & web sites



Application Access

- Must login to web apps (like the Cisco Live app)
- Identify WHO the human is & what access they get to the app
  - Speakers get different access than attendees

Apps could maintain its own User DB

- user1 / pwd
- user2 / pwd
- user3 / pwd

- user1 / pwd
- user2 / pwd
- user3 / pwd

- user1 / pwd
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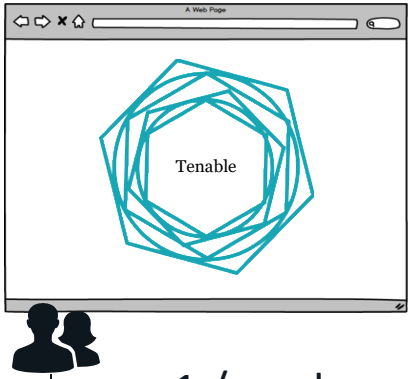
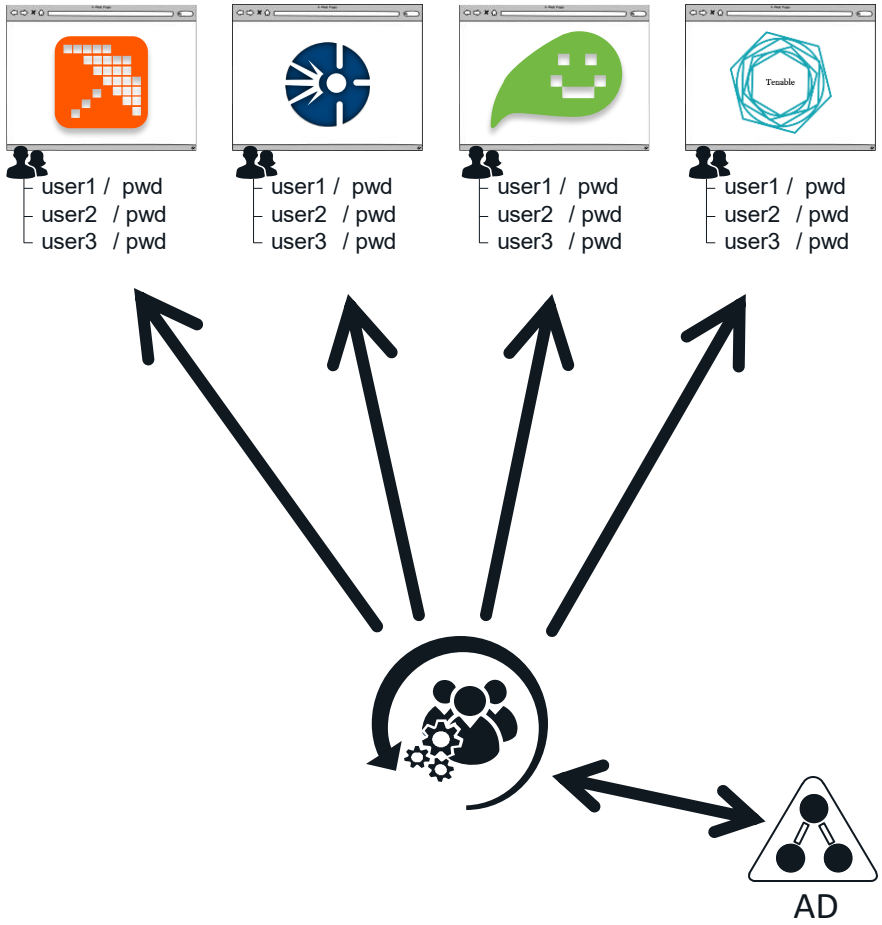


- user1 / pwd
- user2 / pwd
- user3 / pwd

Note: this is not the case for many NEW apps, they instead rely on the Identity Provider for everything. CII (aka: Oort) is an example.

Enter: Identity Management Products

- Solution to keep all user accounts across all these web apps in sync.
  - Examples:
  - - Tivoli Identity Manager
  - - Oracle Identity Manager
  - - Okta Identity Management
  - - etc.



System for Cross-domain Identity Management

SCIM = standard for automating the exchange of user identity information between identity systems.

Aaron likes to equate it to an LDIF export & import in LDAP

Example

- Example of what an IAM would do when you change your password

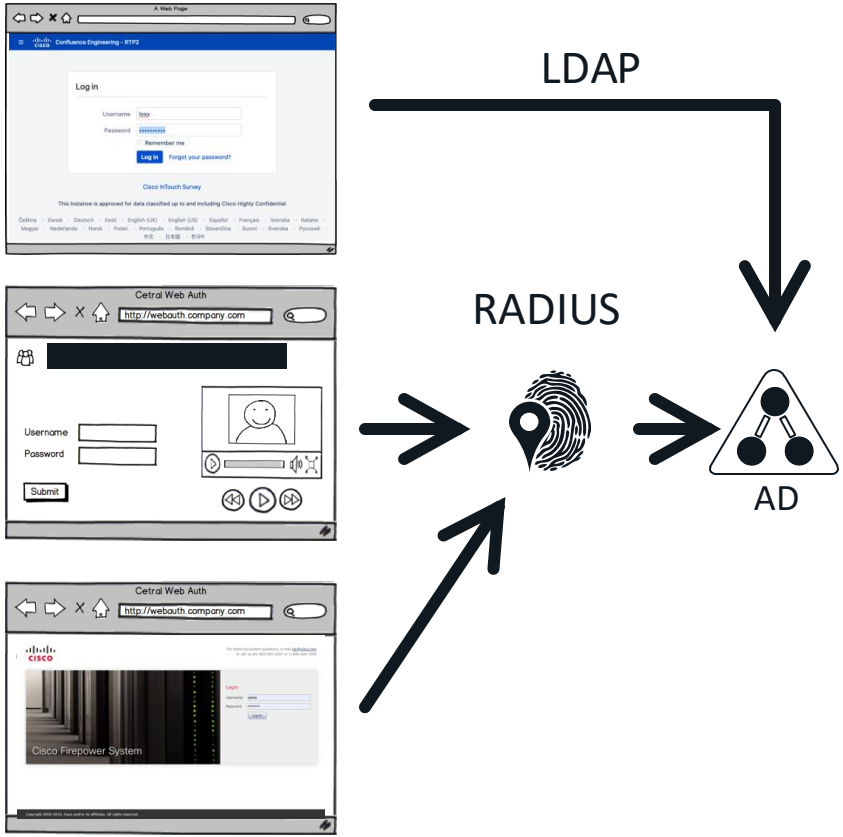
- *** Cisco Infosec policy won't let me show you the REAL screen, so I mocked up a fake*

http://password.company.com

Account	Target System	Password Changed?	Result
loxx	Prod AD	Yes	Success
loxx	Linux NIS	Yes	Success
loxx	Stage AD	Yes	Success
aawoland	OpenLDAP	Yes	Success
loxx	Call Mgr	Yes	Success
loxx	WebEx	Yes	Success

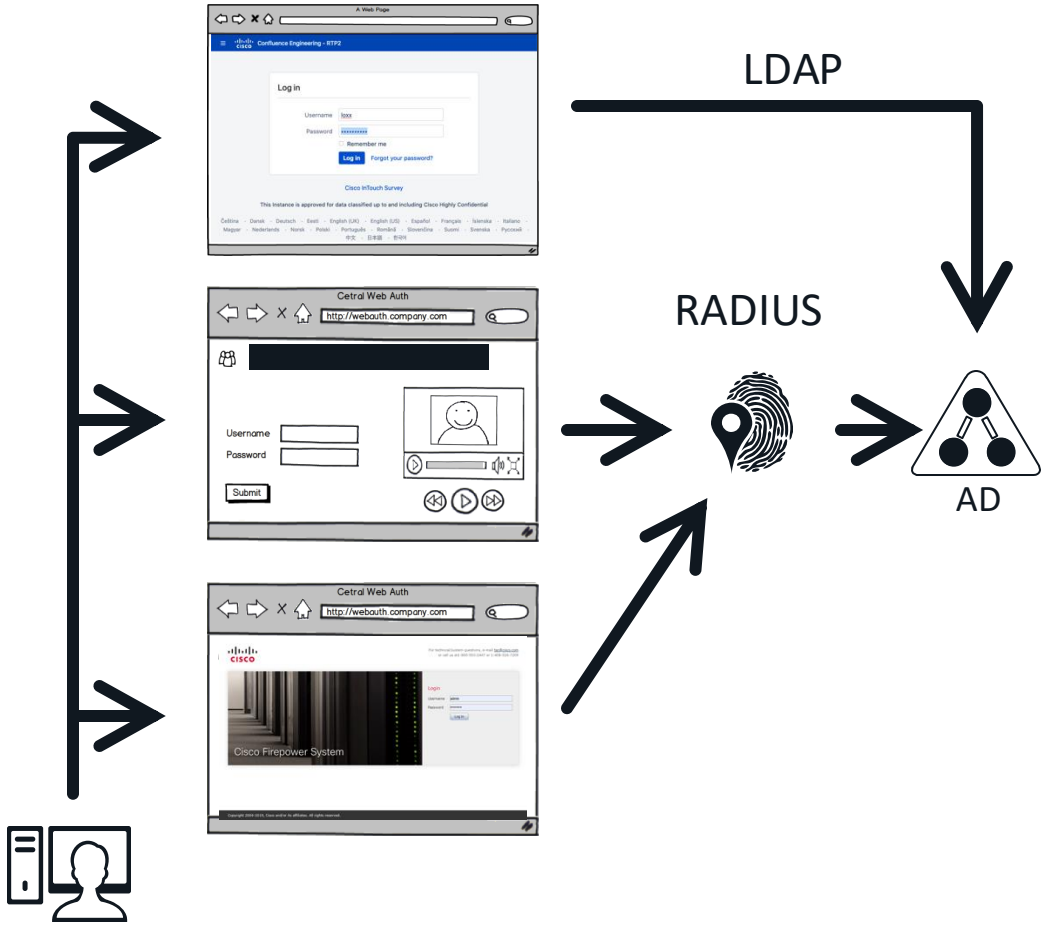
Some tried RADIUS or LDAP logins

- Provided a single location for username/passwords
- But still requires user to login each & every app separately



Bad User Experience

- Still requires a user to log in to each app
  - Same username / password
  - But must use it separately
- Is this Single-Sign-On?



New Term: Federation /fĕd″ə-rā′shən/

Delegation of authority by otherwise independent entities

-Josh Green, Geek

Federation /fĕd”ə-rā’shən/ (dictionary.com)

the formation of a [union], with a central [authority], by a number of separate [entities], each of which retains control of its own internal affairs.

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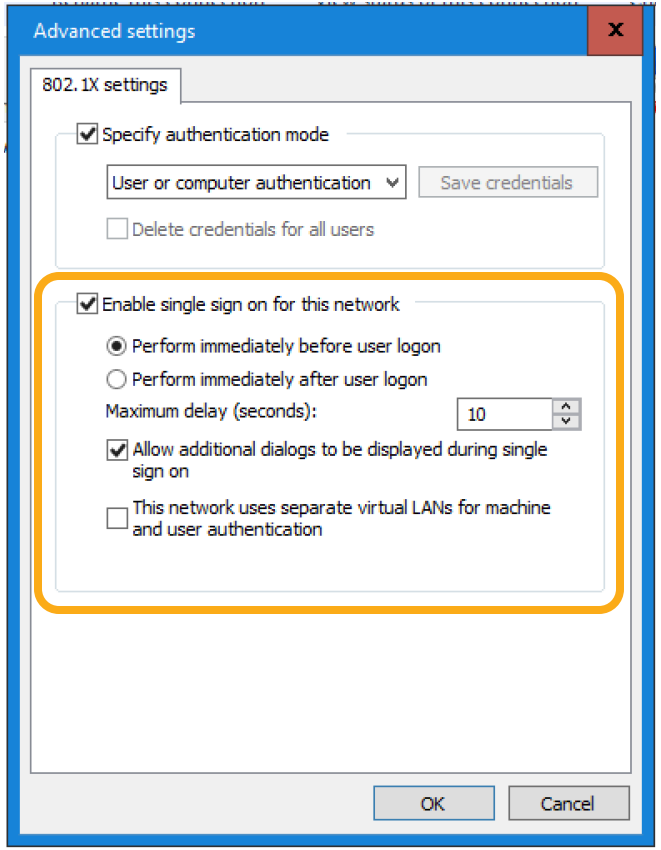
Enter:
Single Sign On

Single Sign On (SSO): one key to unlock multiple doors

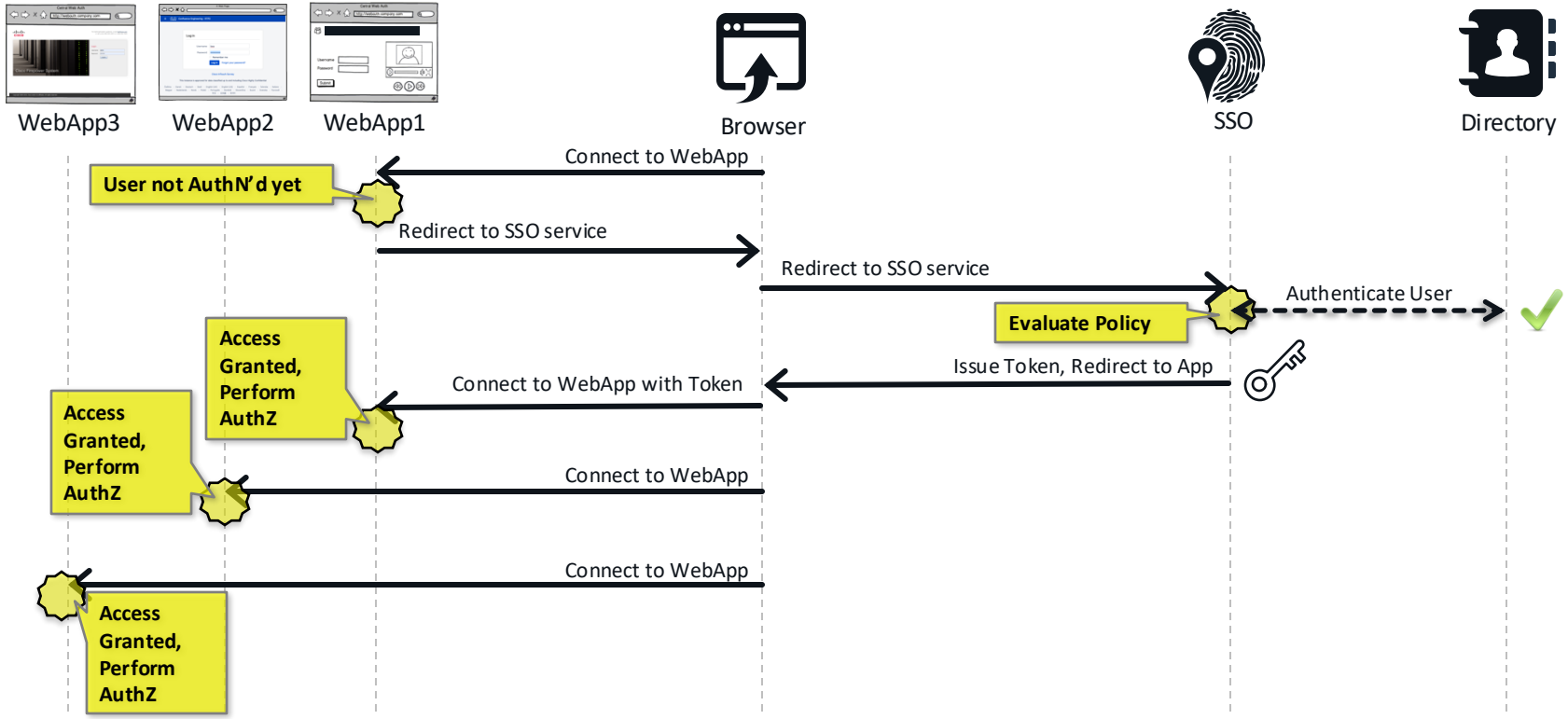
SSO itself is the process that allows a single authentication to be used across multiple web sites or applications

Note: you can have federation without SSO, but you cannot have SSO w/o federation

SSO w/ Dot1X Supplicant



SSO [somewhat] Explained

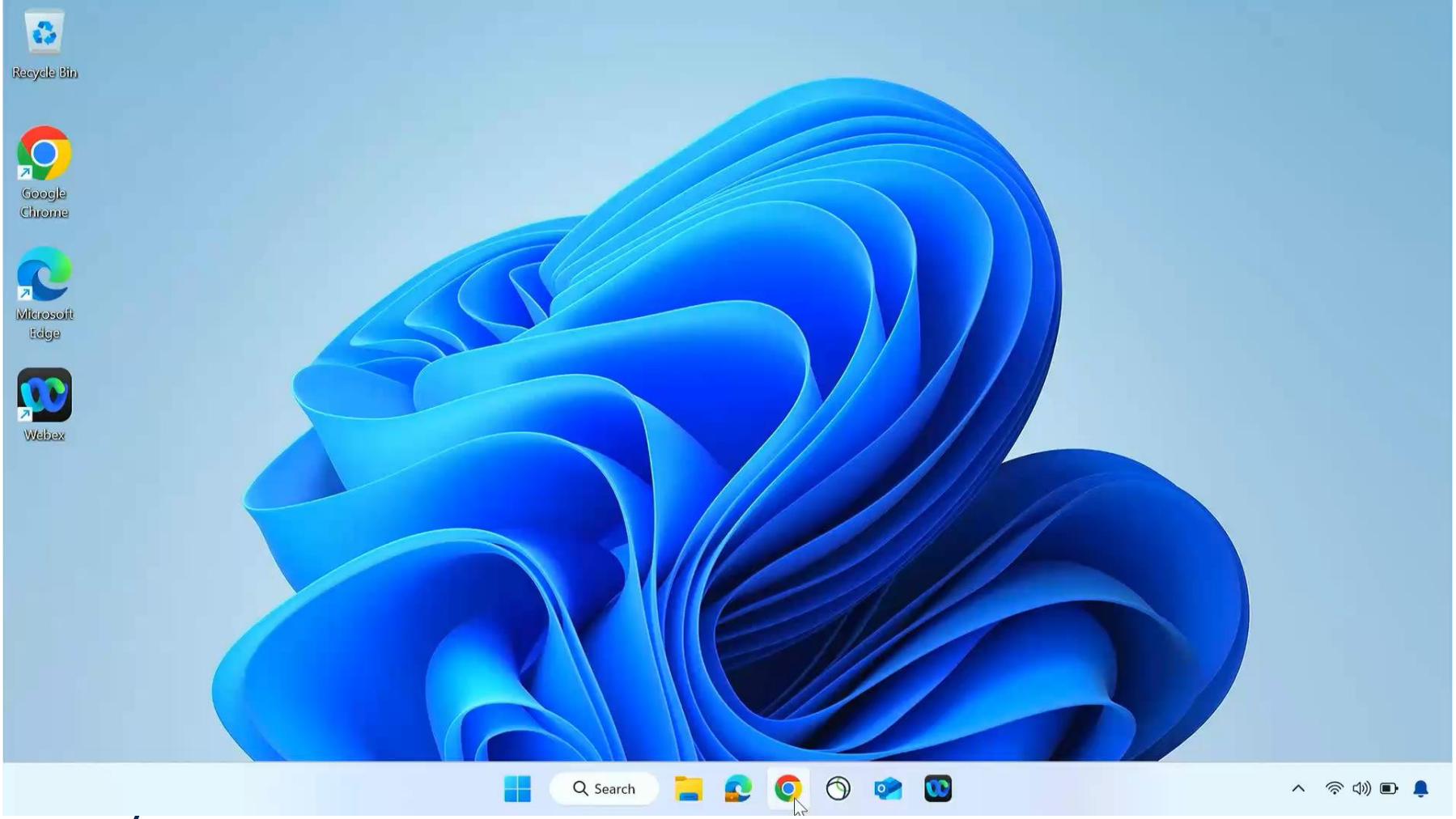


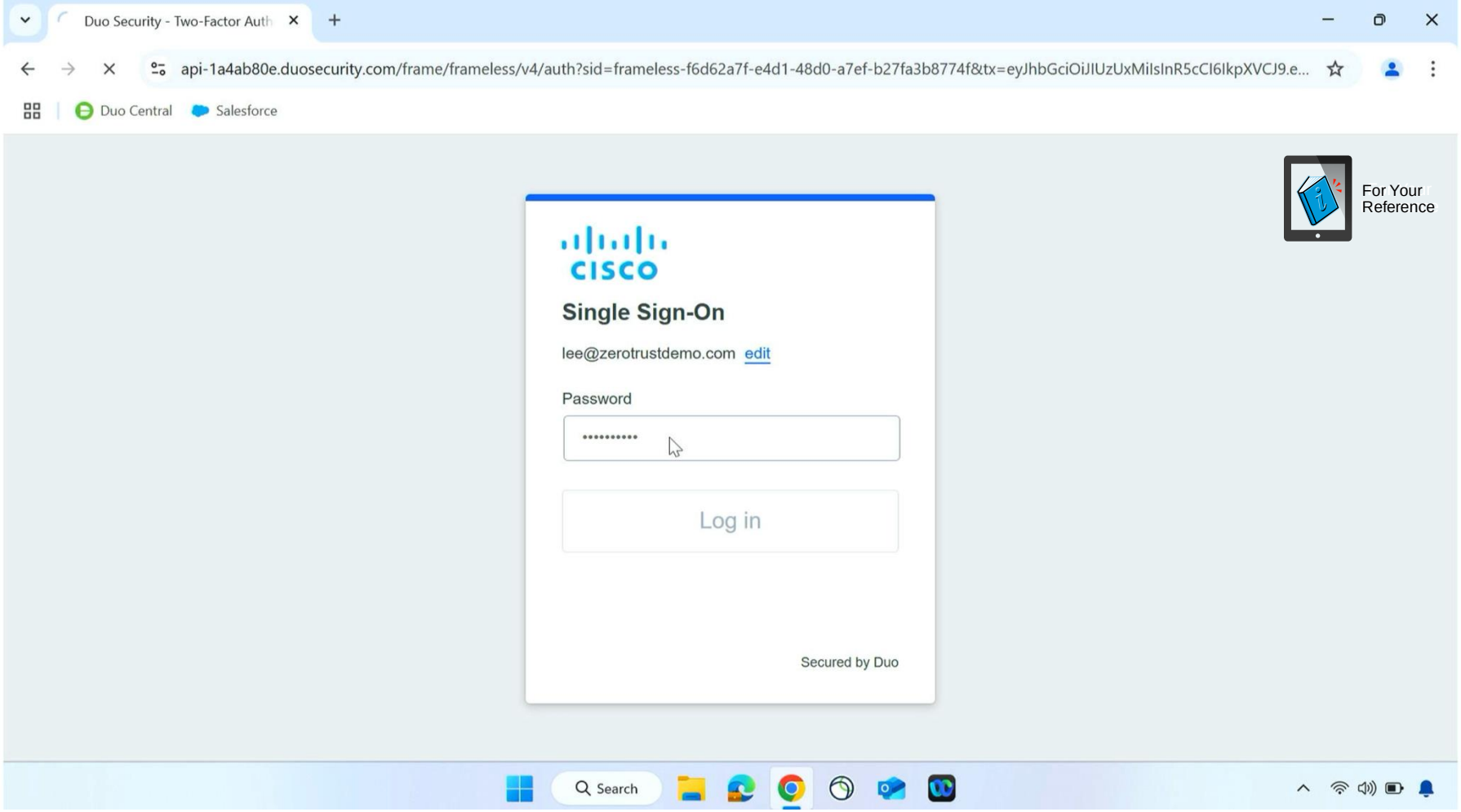
SSO principals

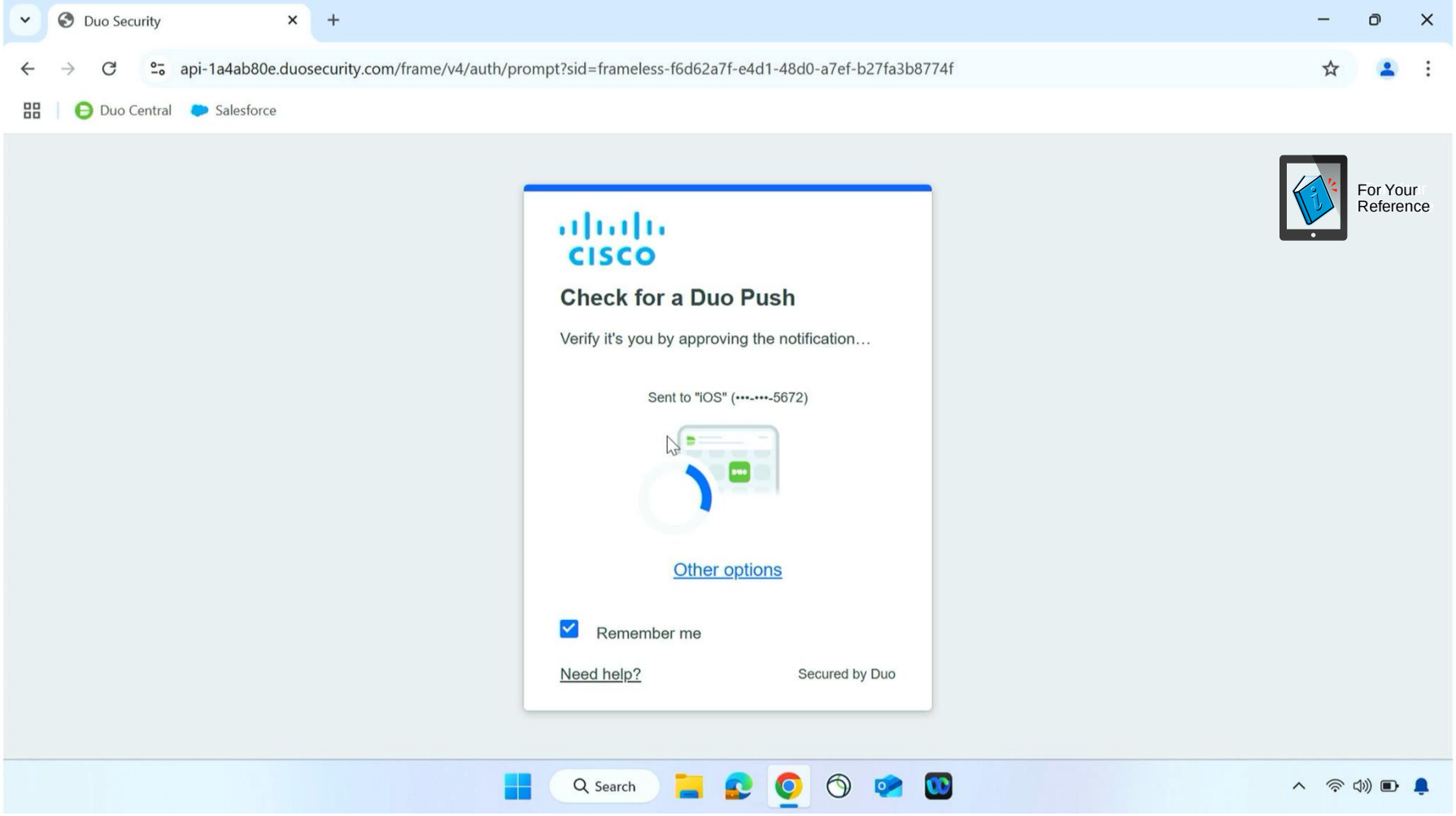
- AuthN One Time
  - Each app uses the same AuthN, performs AuthZ locally
- Tries to use existing auth
  - If no existing, will send user for authentication

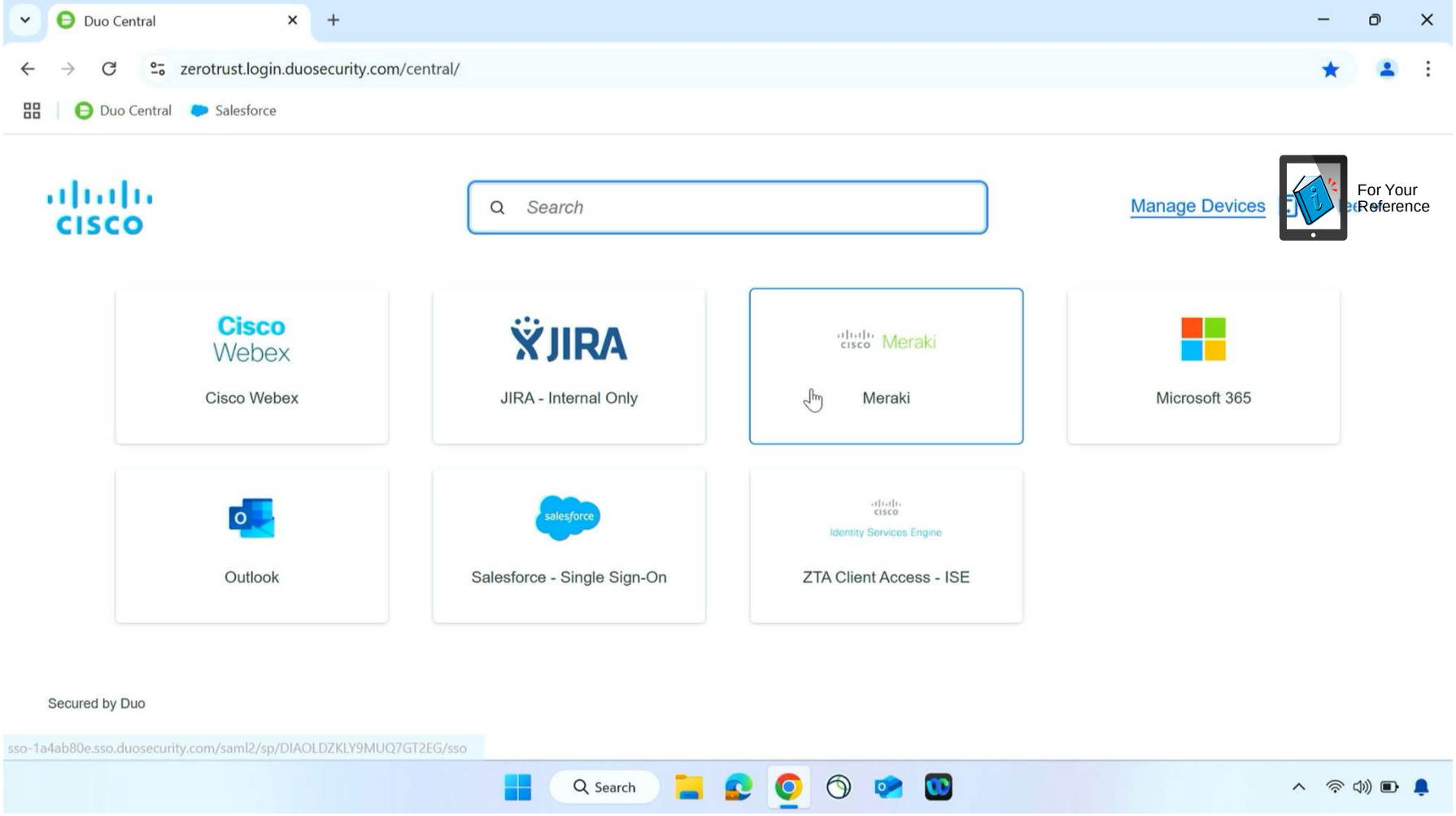
Note: the fact that the app is still still doing local AuthZ shows federation.

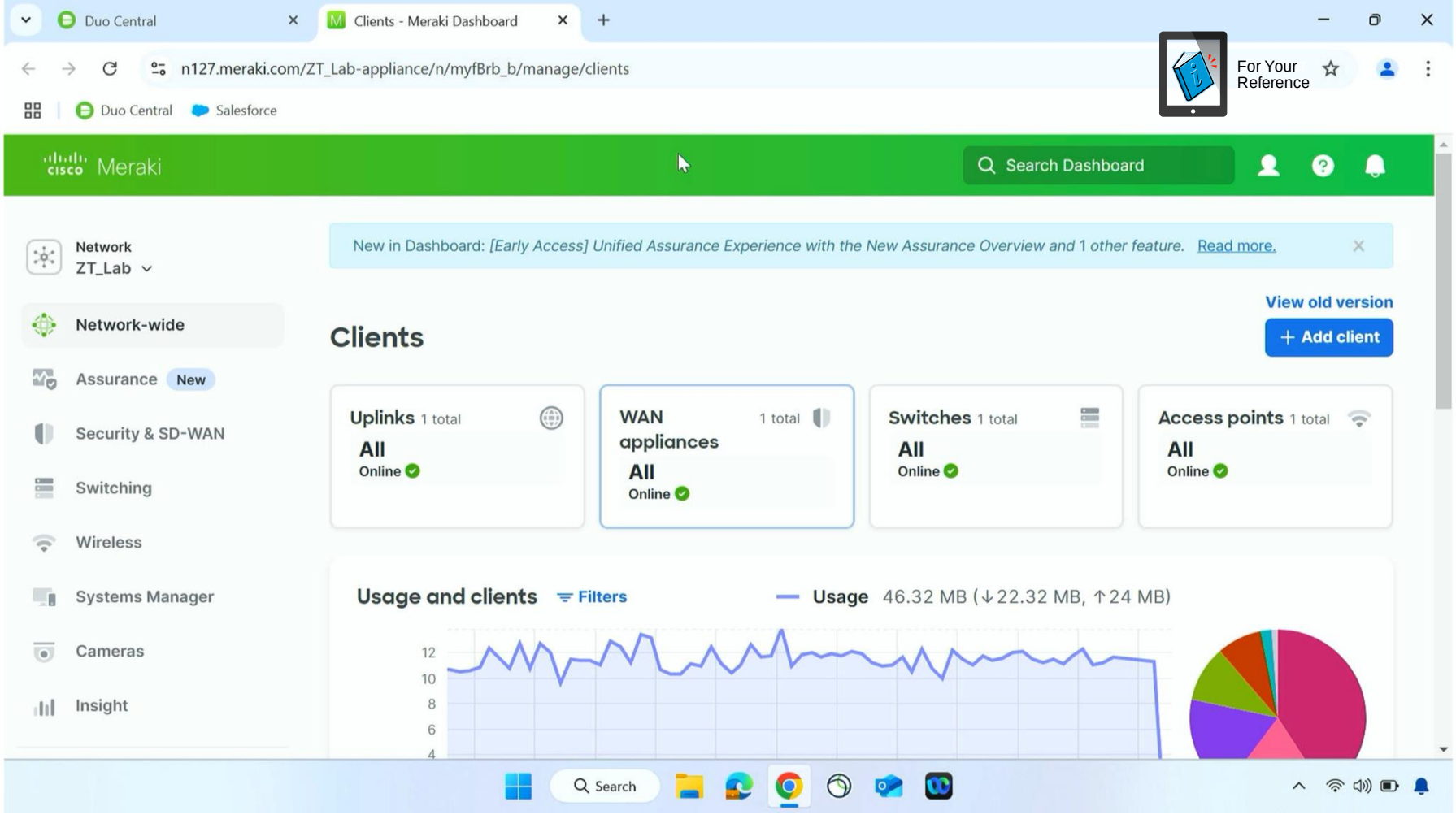
Demo Video: Single Sign On with Duo

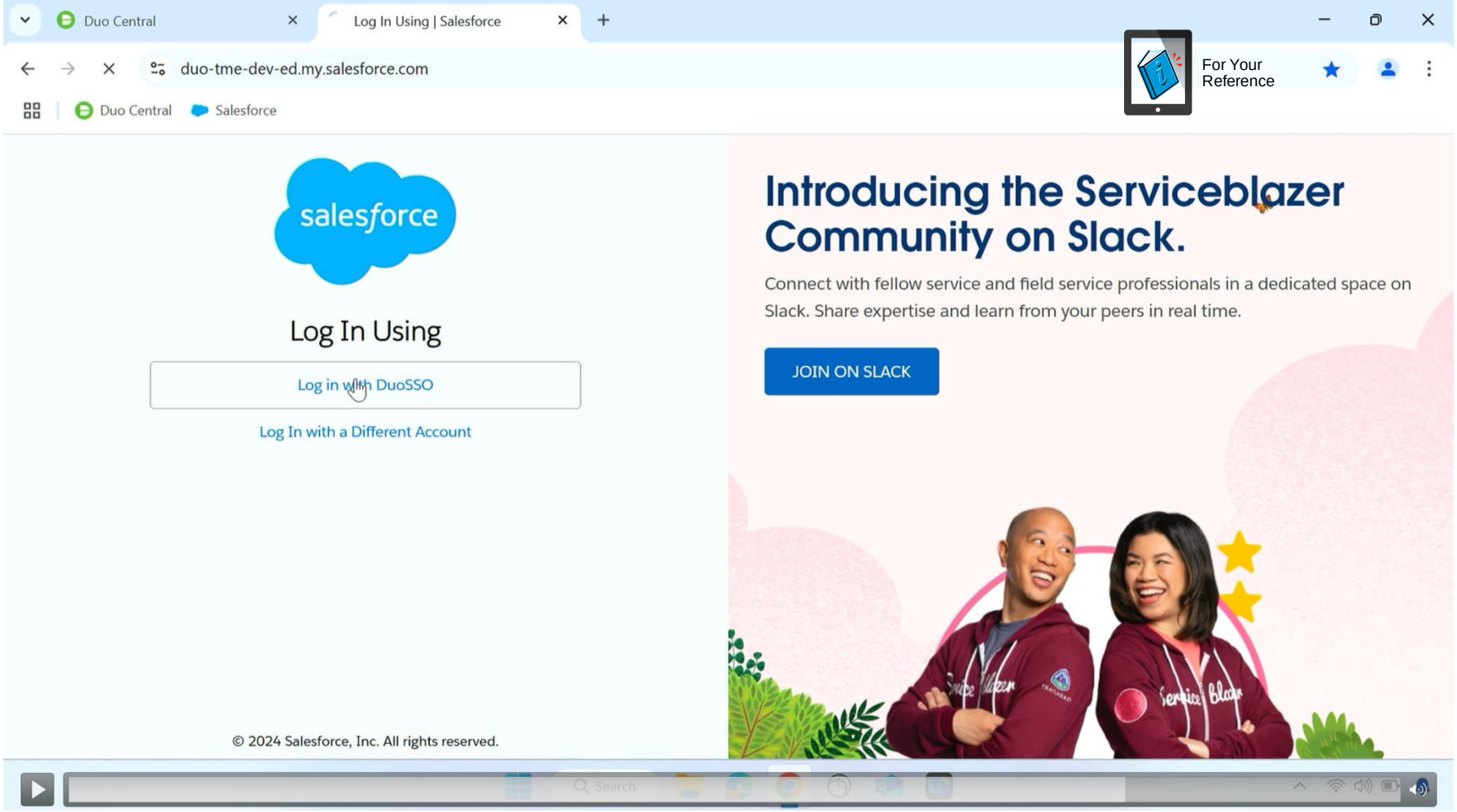


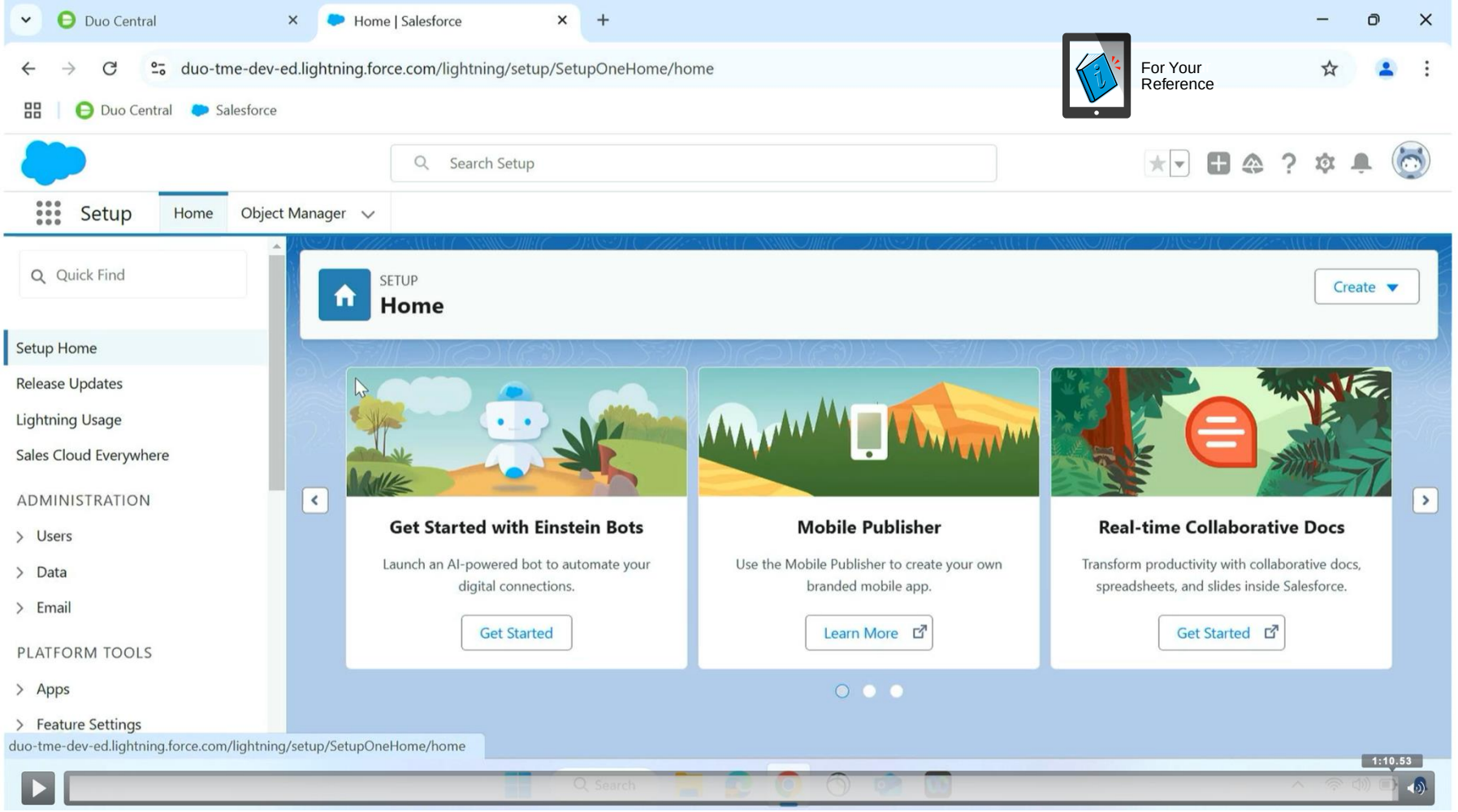












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Enter:
Security Assertion Markup Language (SAML)

Security Assertion Markup Language (SAML)

The XACML working group had to find something to do with their stuff ☺

- Open Standard (OASIS Consortium)
  - v2 is most common, standardized back in 2005
  - Allows the SSO product to pass credentials to applications, so a single credential can be used across many web sites / apps
  - Uses XML for the data

Definitions

Web-based Auth's

Browser
aka: User Agent

Service Provider (SP)

IdP

Directory

Acts as the "client". Each AuthN session is stored per-UserAgent
(ex: Outlook, Chrome, Safari, etc.)

Like combo of supplicant & authenticator in dot1x.

802.1X

Supplicant

Authenticator

Authentication Server

Directory

Definitions

Web-based Auth's

Browser
aka: User Agent

Service Provider (SP)

The application that needs to be logged into.
(ex: ServiceNow, SalesForce, etc.)

Like the Authenticator in dot1x

IdP

Directory

802.1X

Supplicant

Authenticator

Authentication Server

Directory

Definitions

Web-based Auth's

Browser
aka: User Agent

Service Provider (SP)

Identity Provider (IdP)

Directory

Handles the authentication, issues assertion, etc.
(ex: PING, EntraID, Shibboleth, etc.)

Like the Authentication Server in dot1x

802.1X

Supplicant

Authenticator

Authentication Server

Directory

Definitions

Web-based Auth's

Browser
aka: User Agent

Service Provider (SP)

Identity Provider (IdP)

Directory

The ID store. Could be built into the IdP or could be separate (like AD).
(ex: AD, LDAP, JDBC, etc.)

Same as the ID Store with dot1x

802.1X

Supplicant

Authenticator

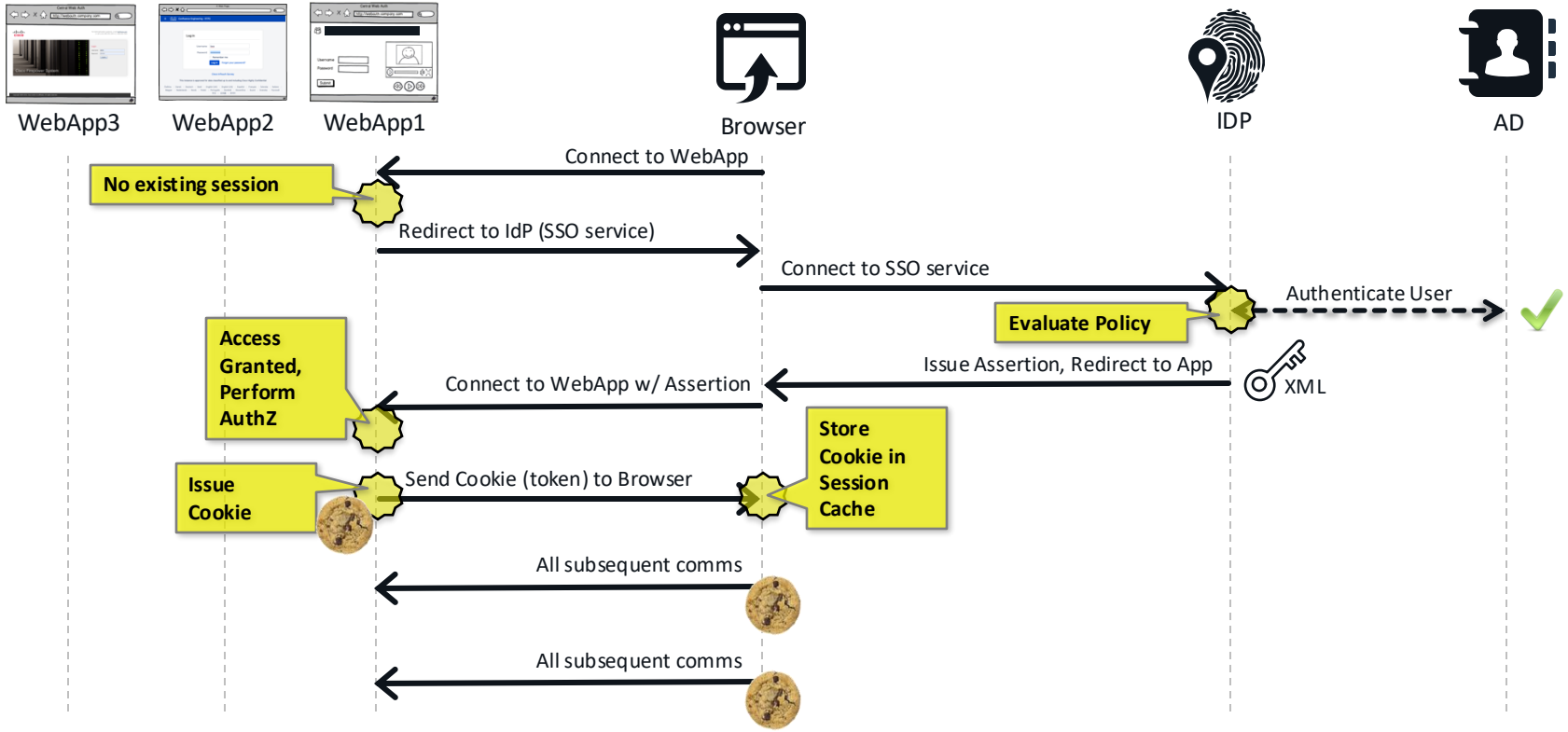
Authentication Server

Directory

More Definitions

- **Assertion:** In SAML, an assertion is a package of information that the IdP sends to the SP. This information typically includes authentication statements, attributes about the user, and authorization decisions.
  - Often interchanged with term “Token”
- **Assertion Consumer Service (ACS):** This is a specific endpoint (URL) on the Service Provider's side where the SAML assertion is sent. The ACS is responsible for receiving the SAML response from the IdP, processing it, and then using the information contained within to authenticate and potentially authorize the user.

SAML for Single-Sign-On



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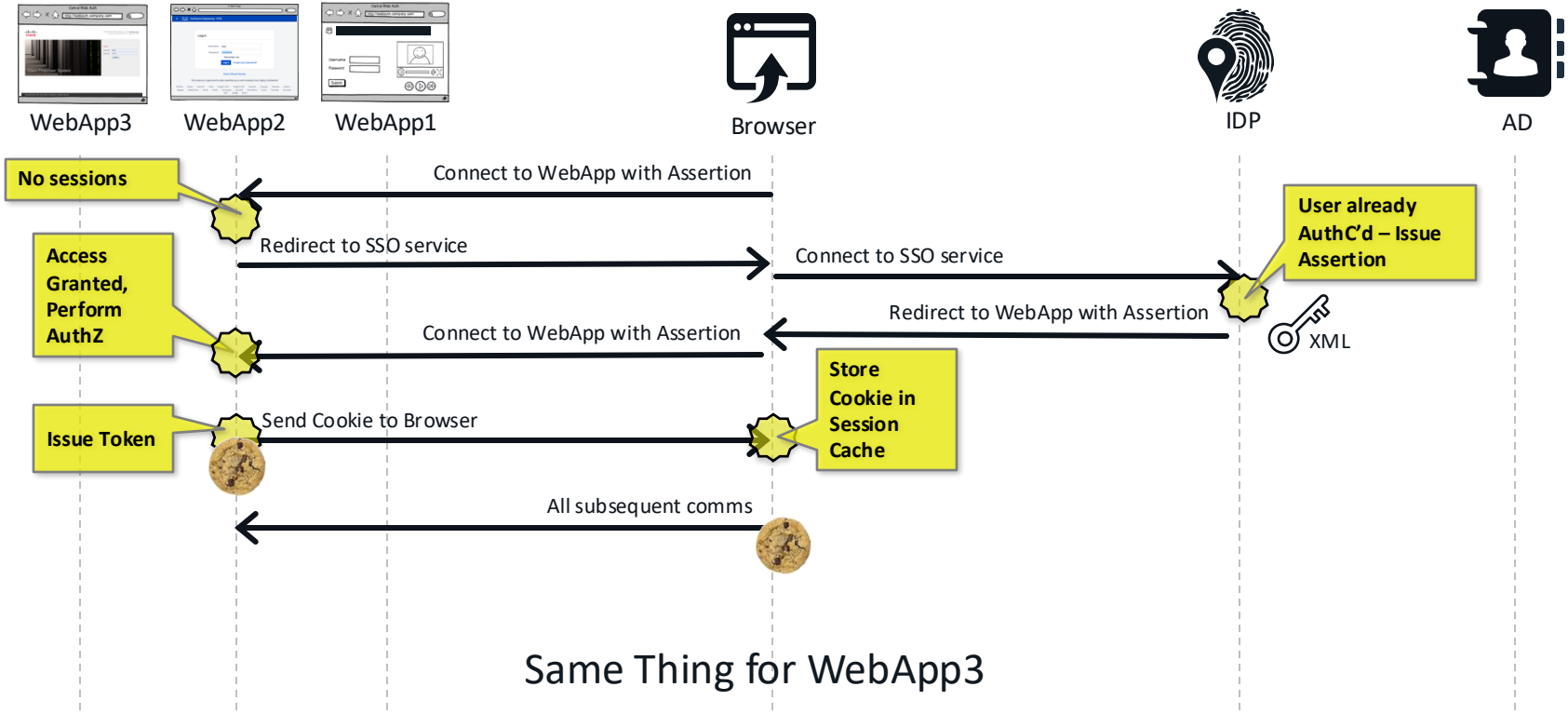
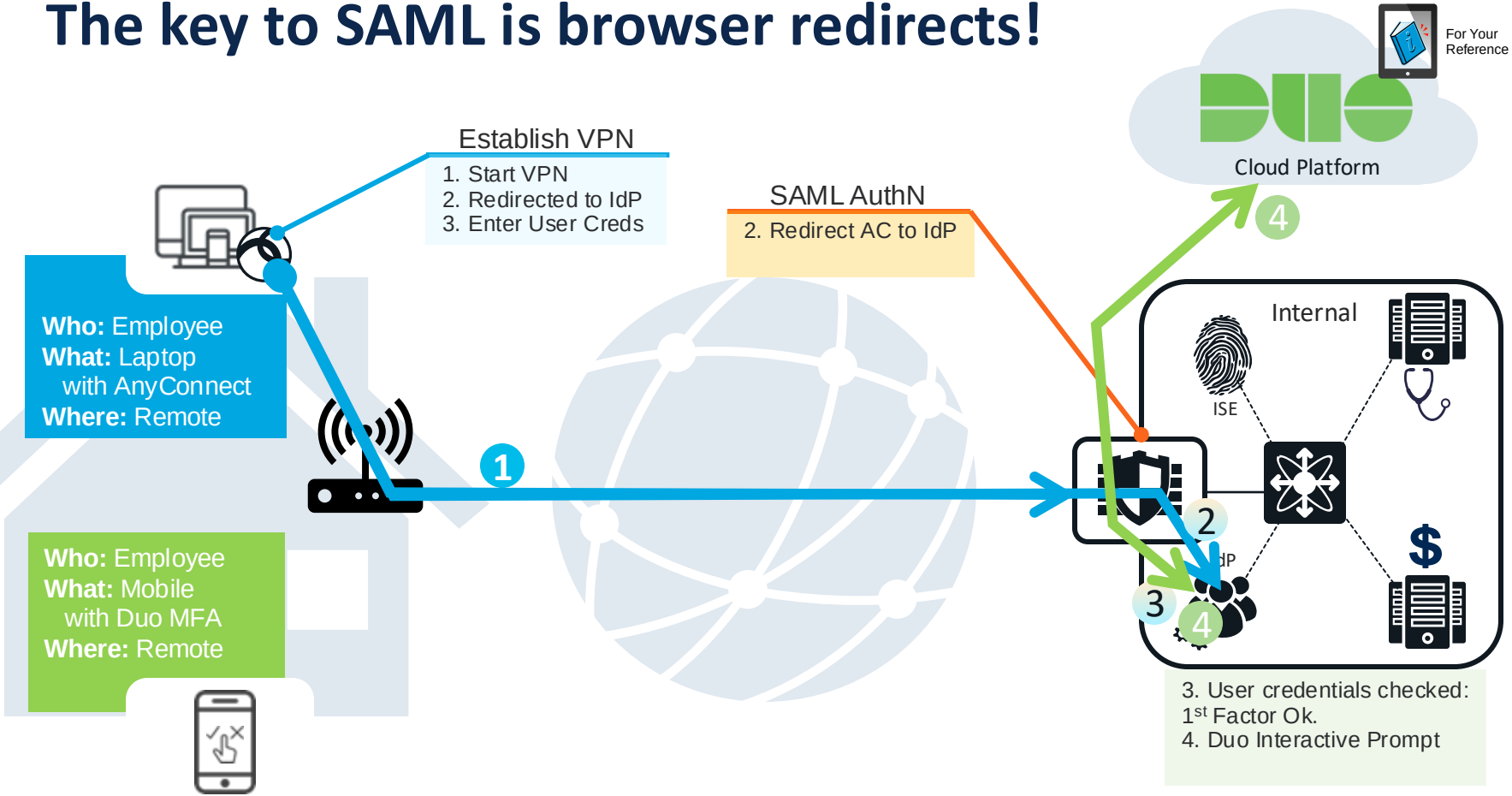


The key to SAML is browser redirects!



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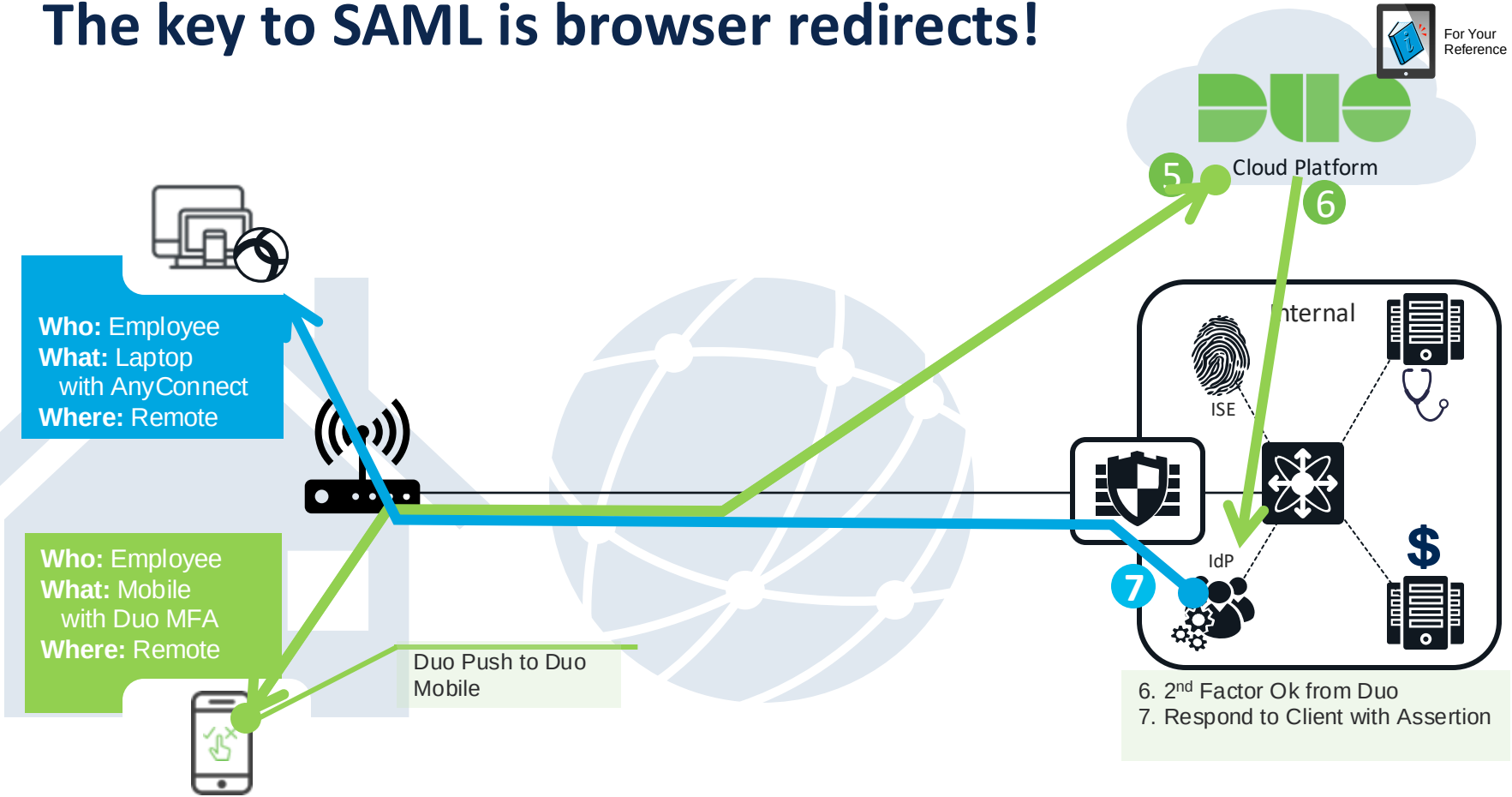

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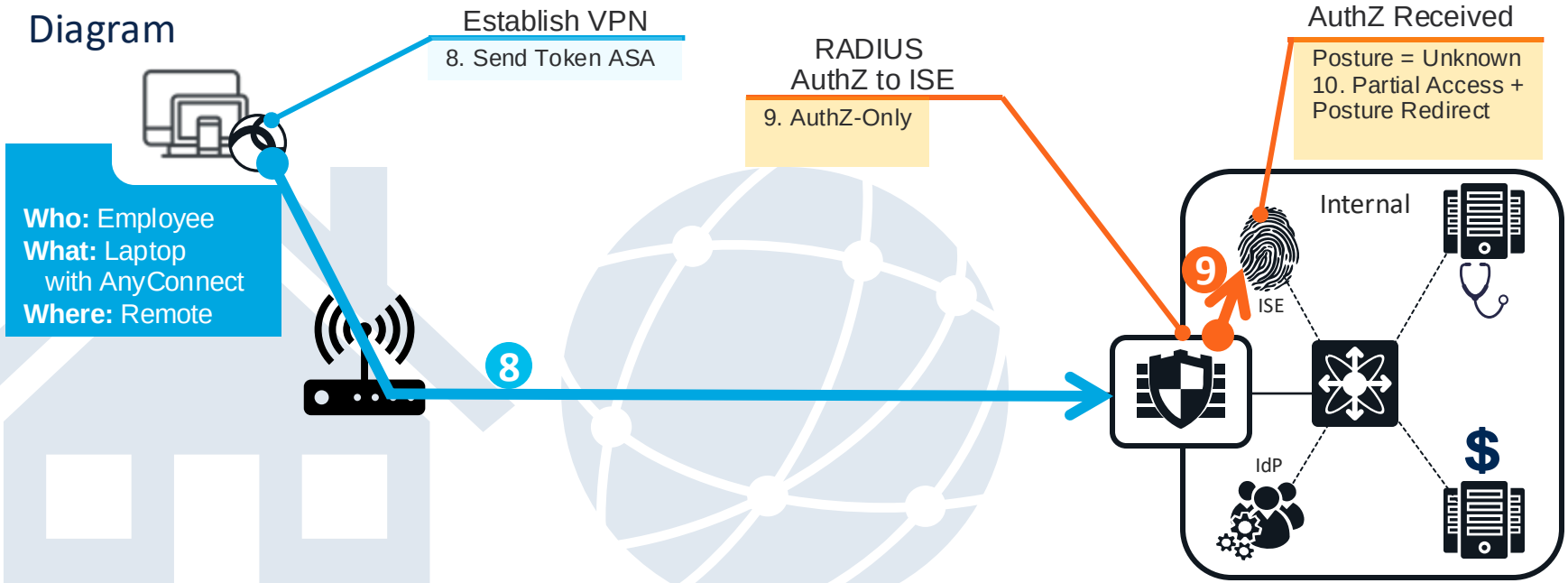
For Your Reference

Solution Overview

Diagram



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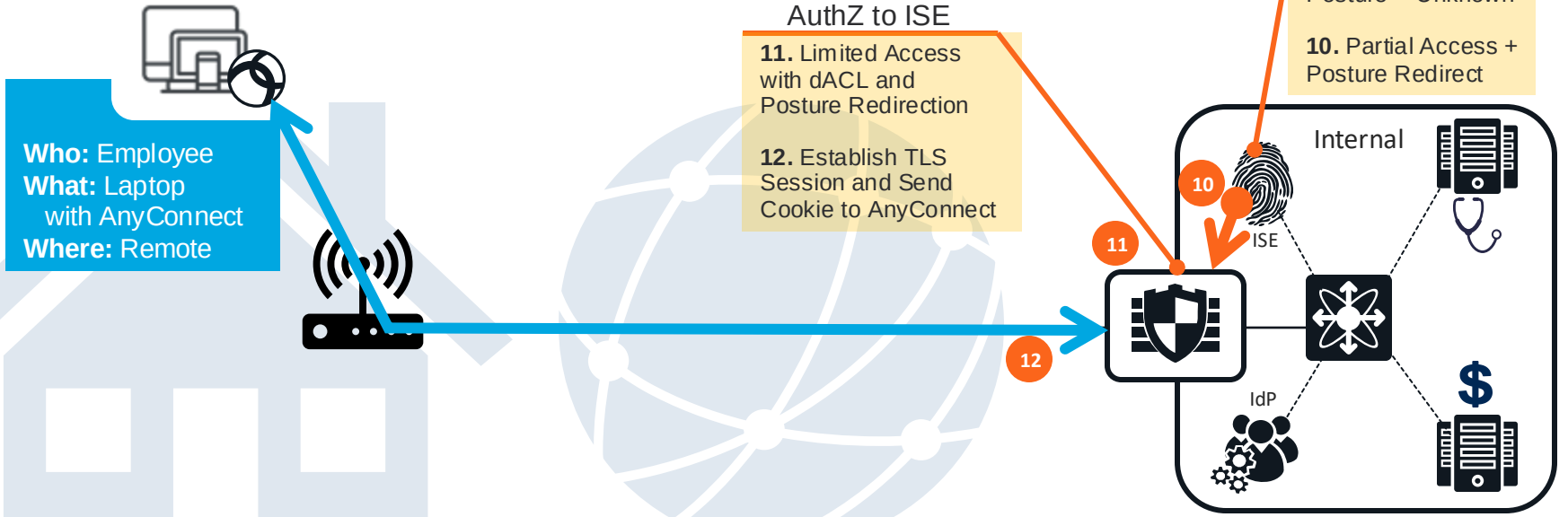

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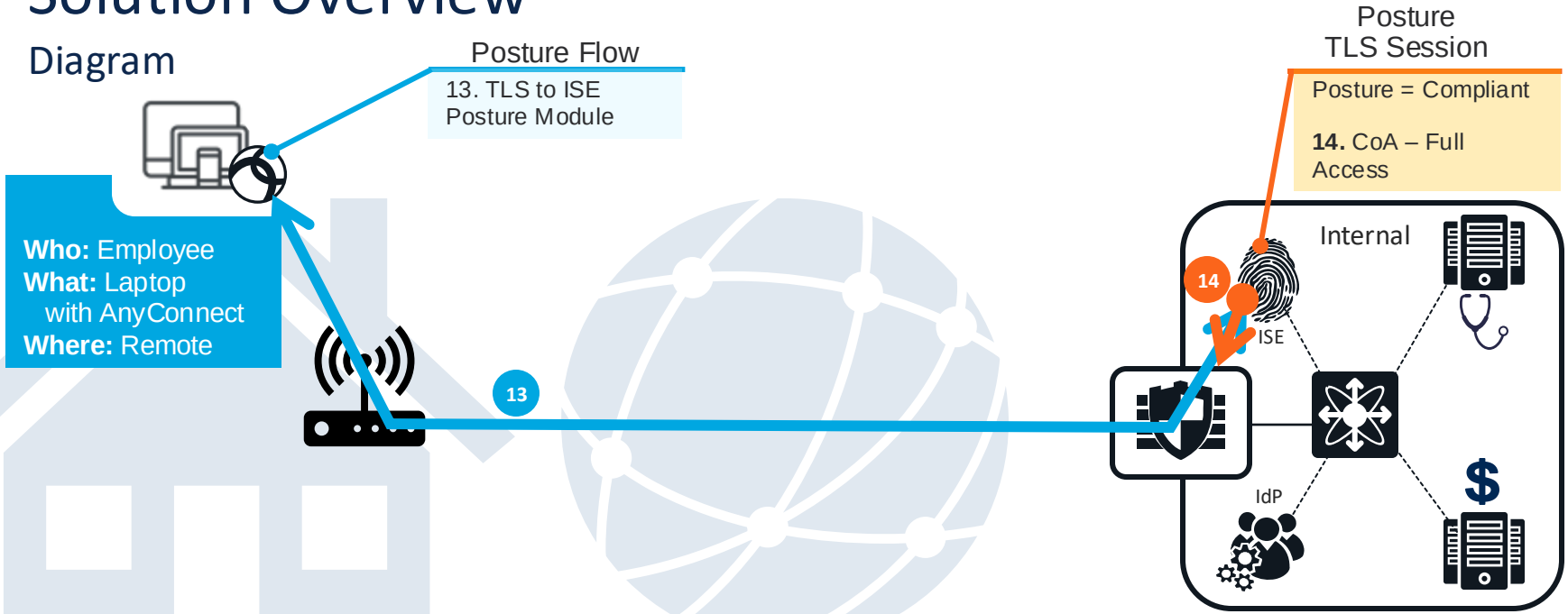

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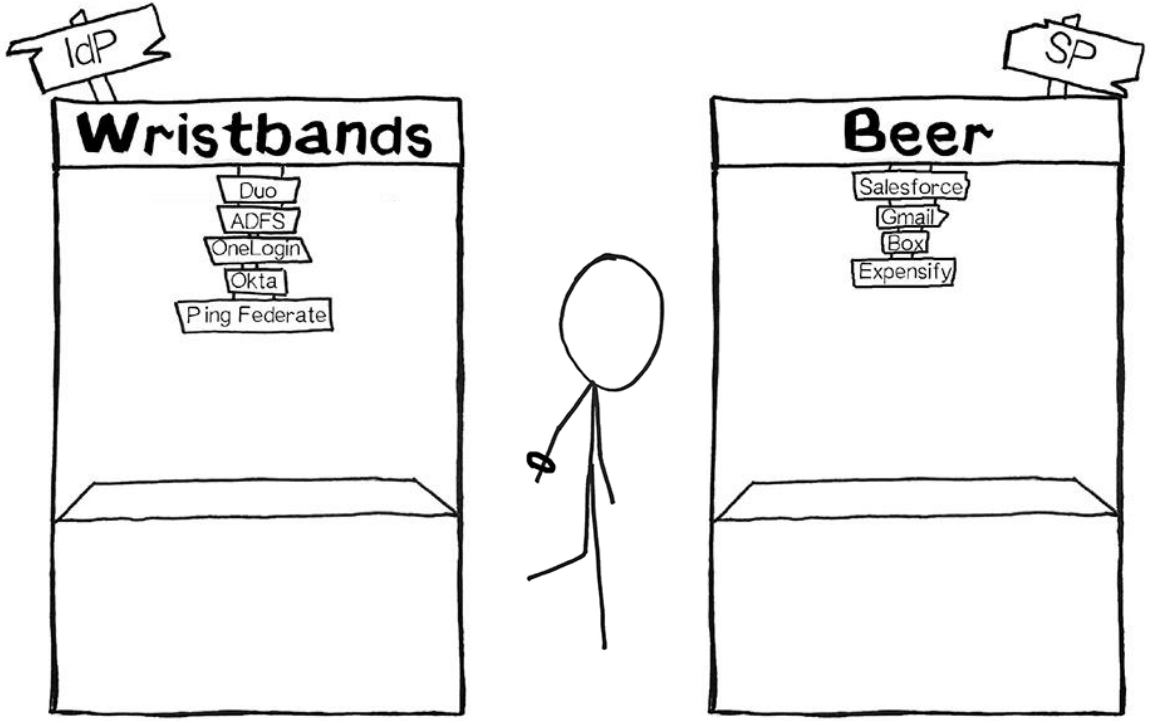
The Beer Drinker's Guide to SAML



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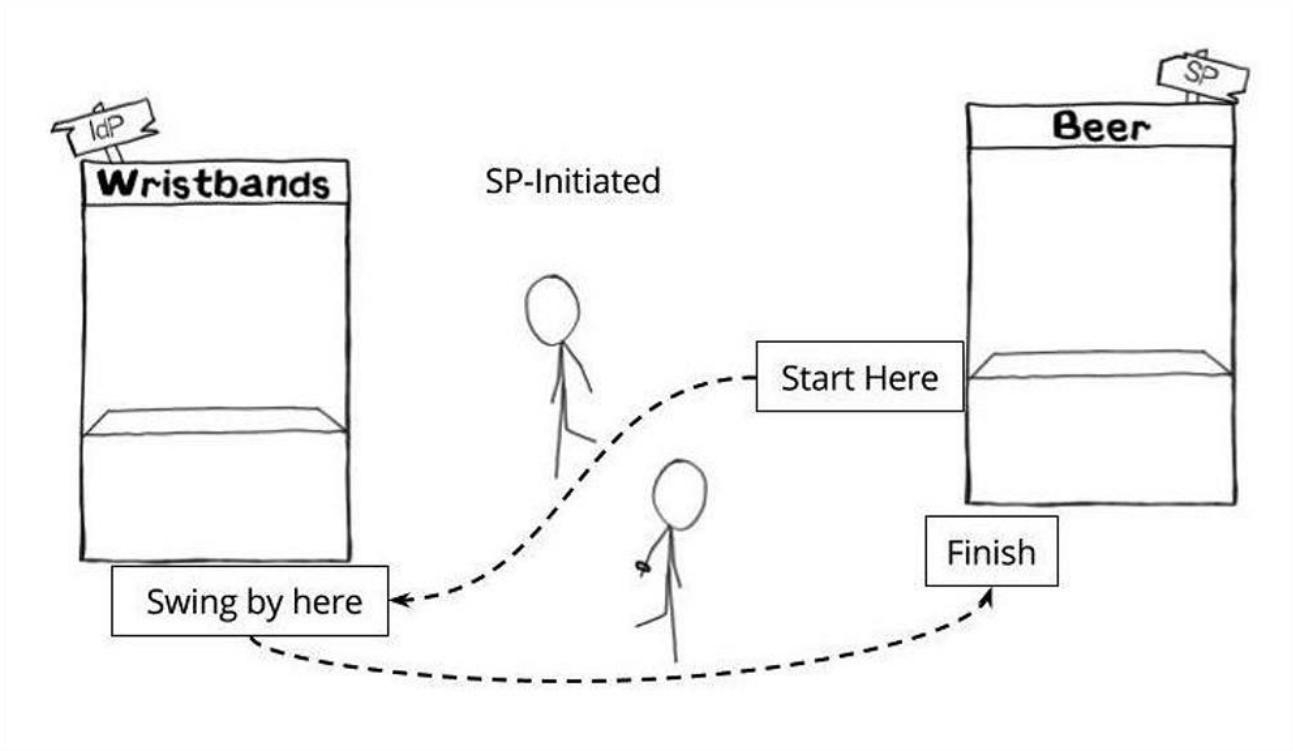

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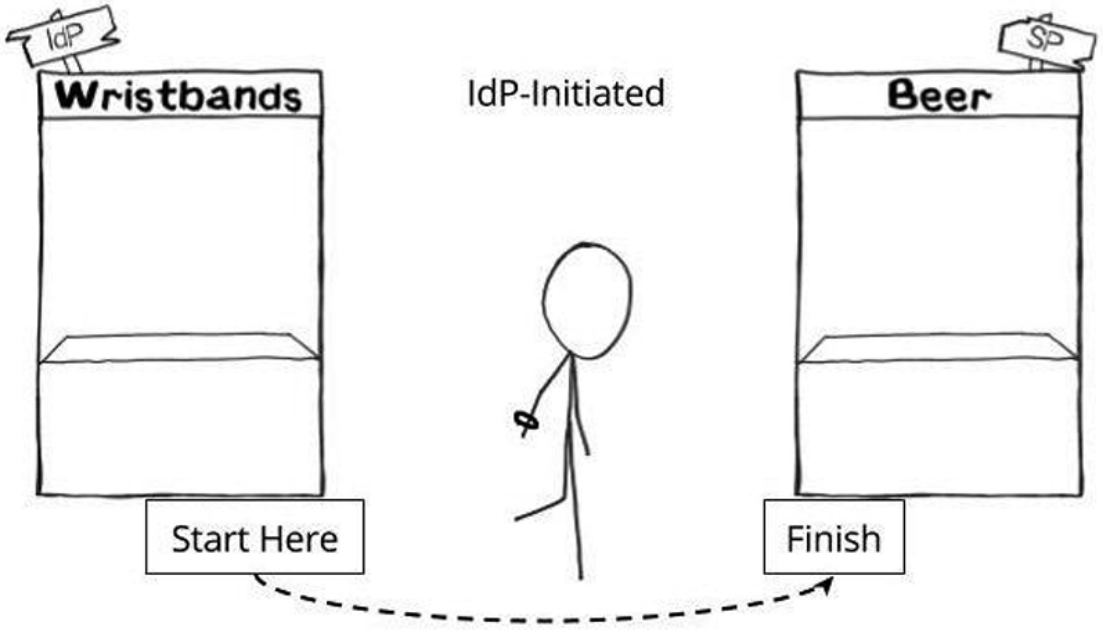


IDP vs. SP Initiated Login

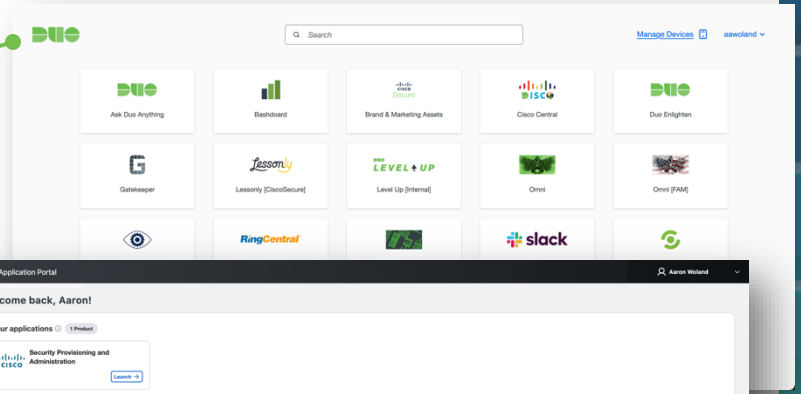
IdP Initiated Login

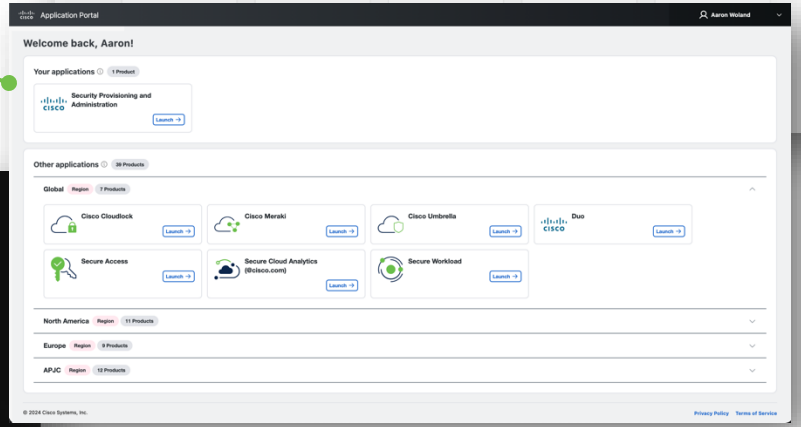
Centralized App Launch Location – end—user logs in to the central portal with SSO.

Clicks one of the tiles & is directed to the SP (application) with the token ”in-hand”.

Preferred when a simplified user-experience is desired w/ a single place to access all the applications.

Examples: **Security Cloud Sign-on** & **Duo Central**

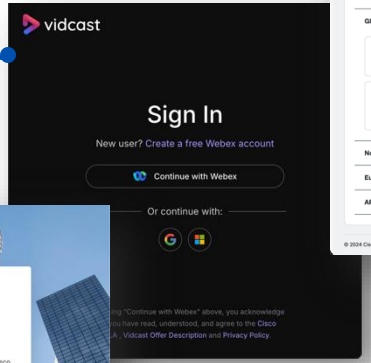


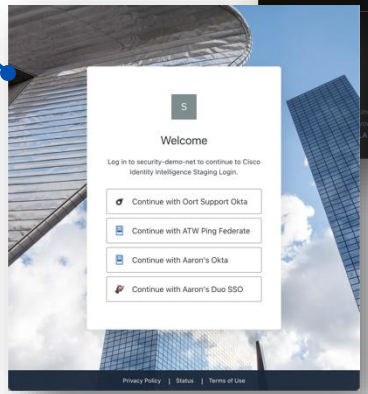


SP Initiated Login

Application triggered login – when logging into the application itself, the end-user is redirected to the IdP for authentication.

Examples: **CII** & **Webex**





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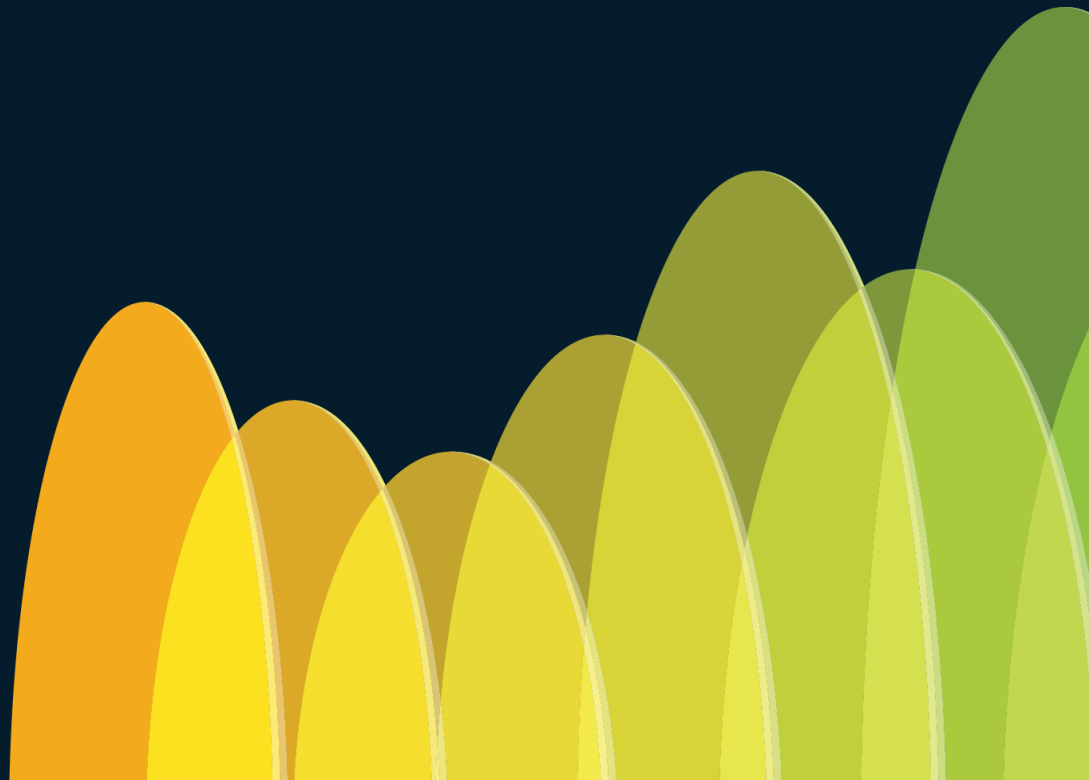
- **IDP-Initiated Login** is best for centralized access and is user-friendly for accessing multiple applications from one place.
- **SP-Initiated Login** offers more control to the SP and may provide a more contextual experience for users when accessing specific resources.

- The choice between the two often depends on the specific use case, organizational needs, and user experience considerations.

Example: Moving from RADIUS to SAML for SSO with VPN



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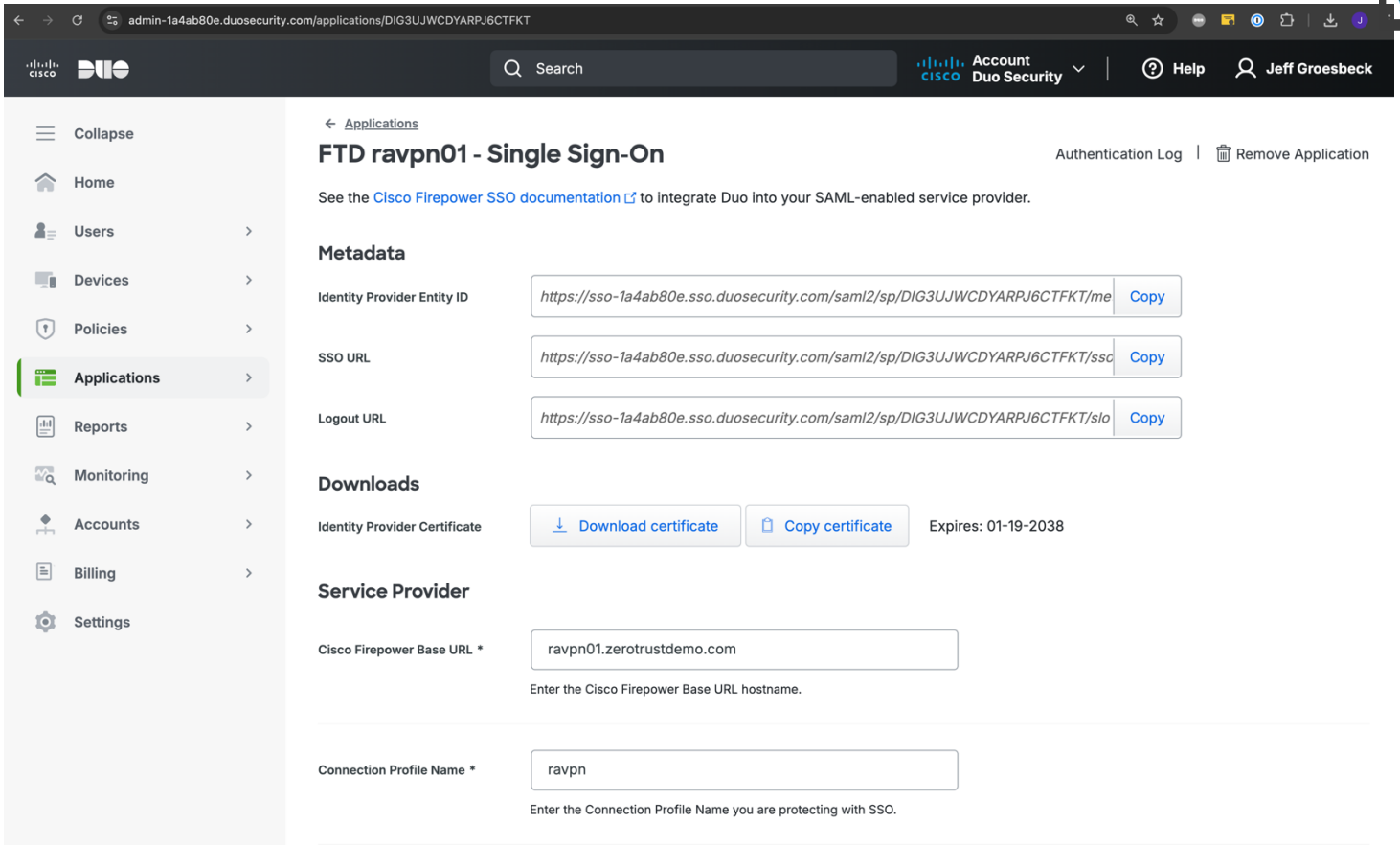
FTD VPN SAML conversion

For Your Reference



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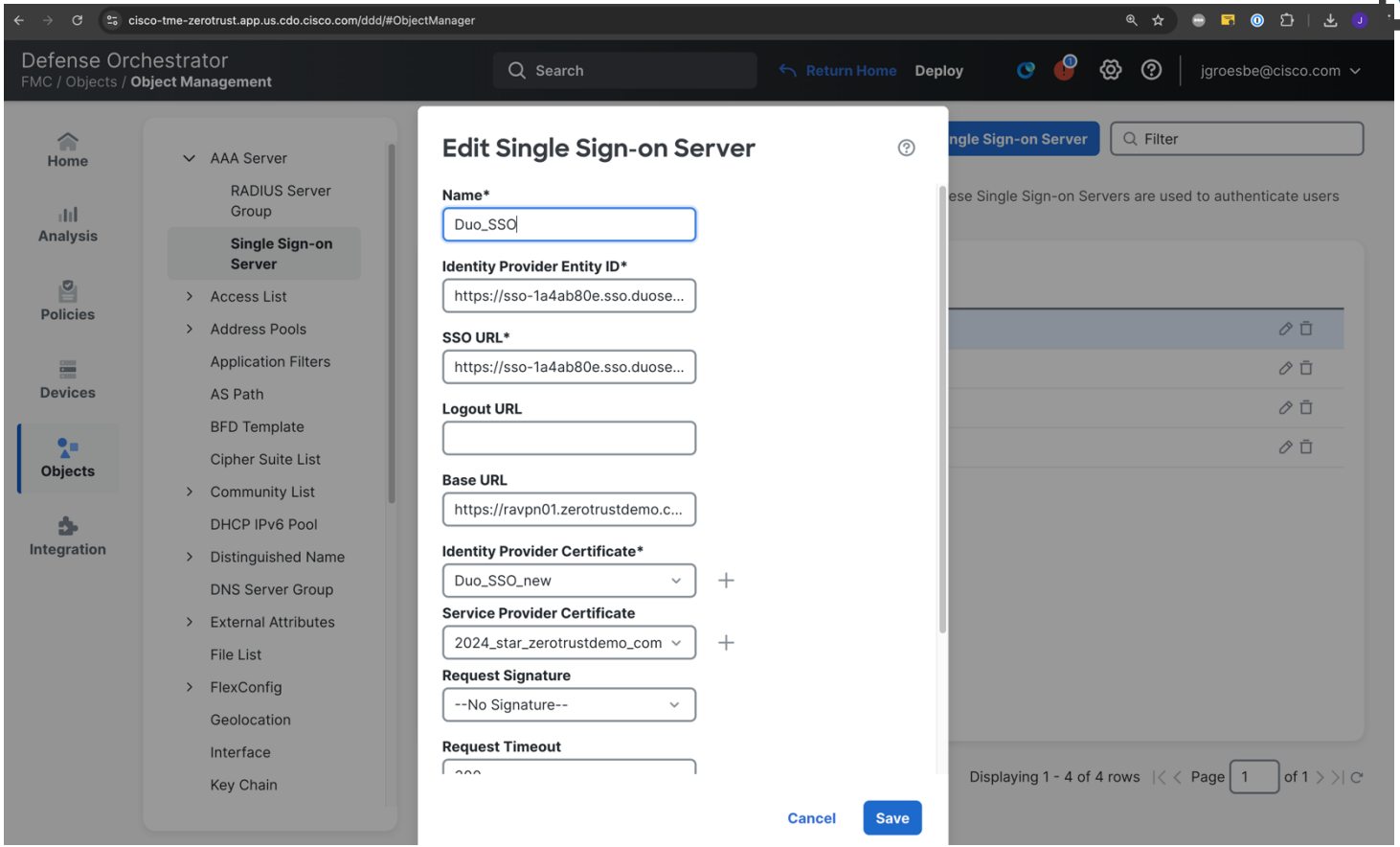
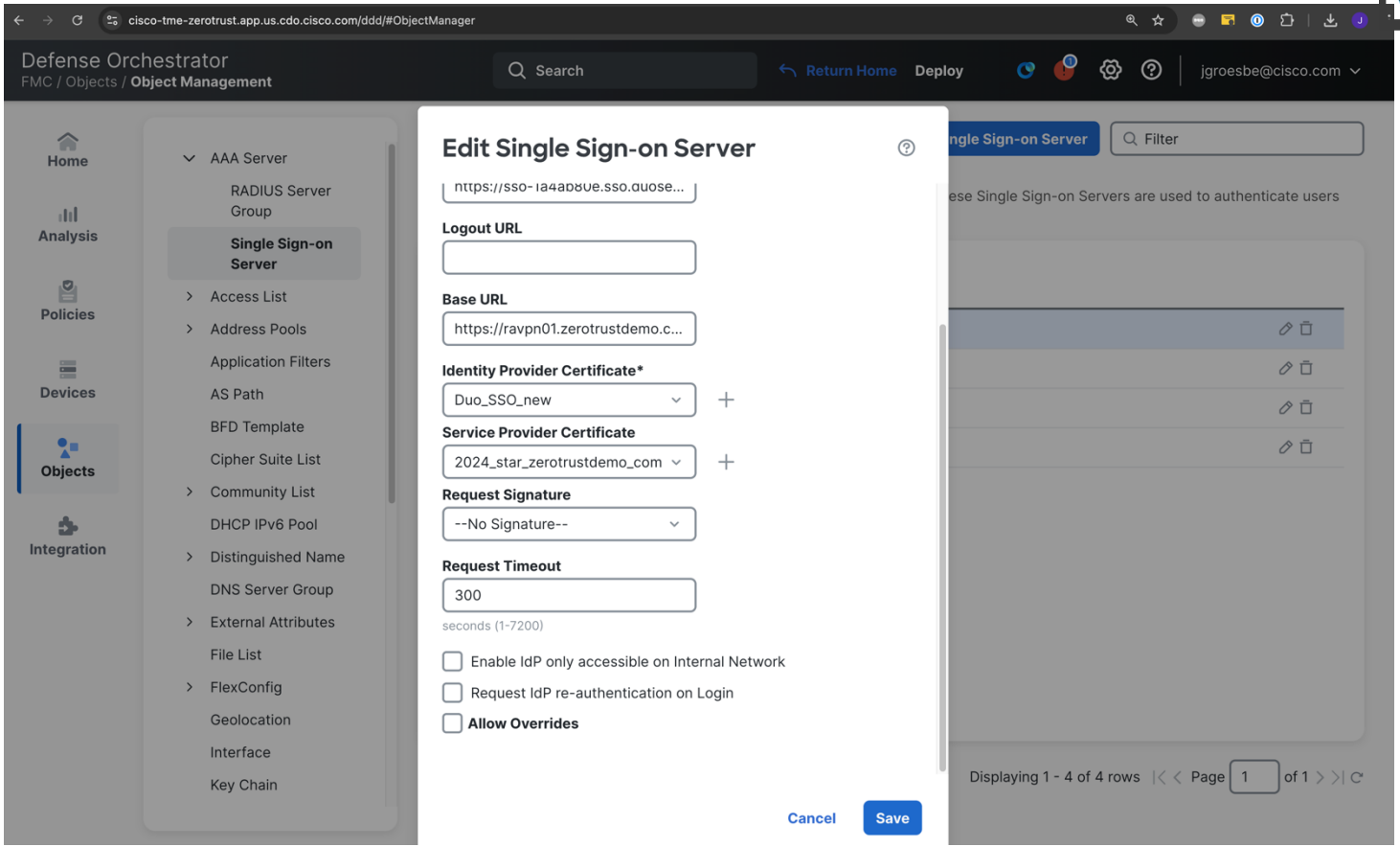
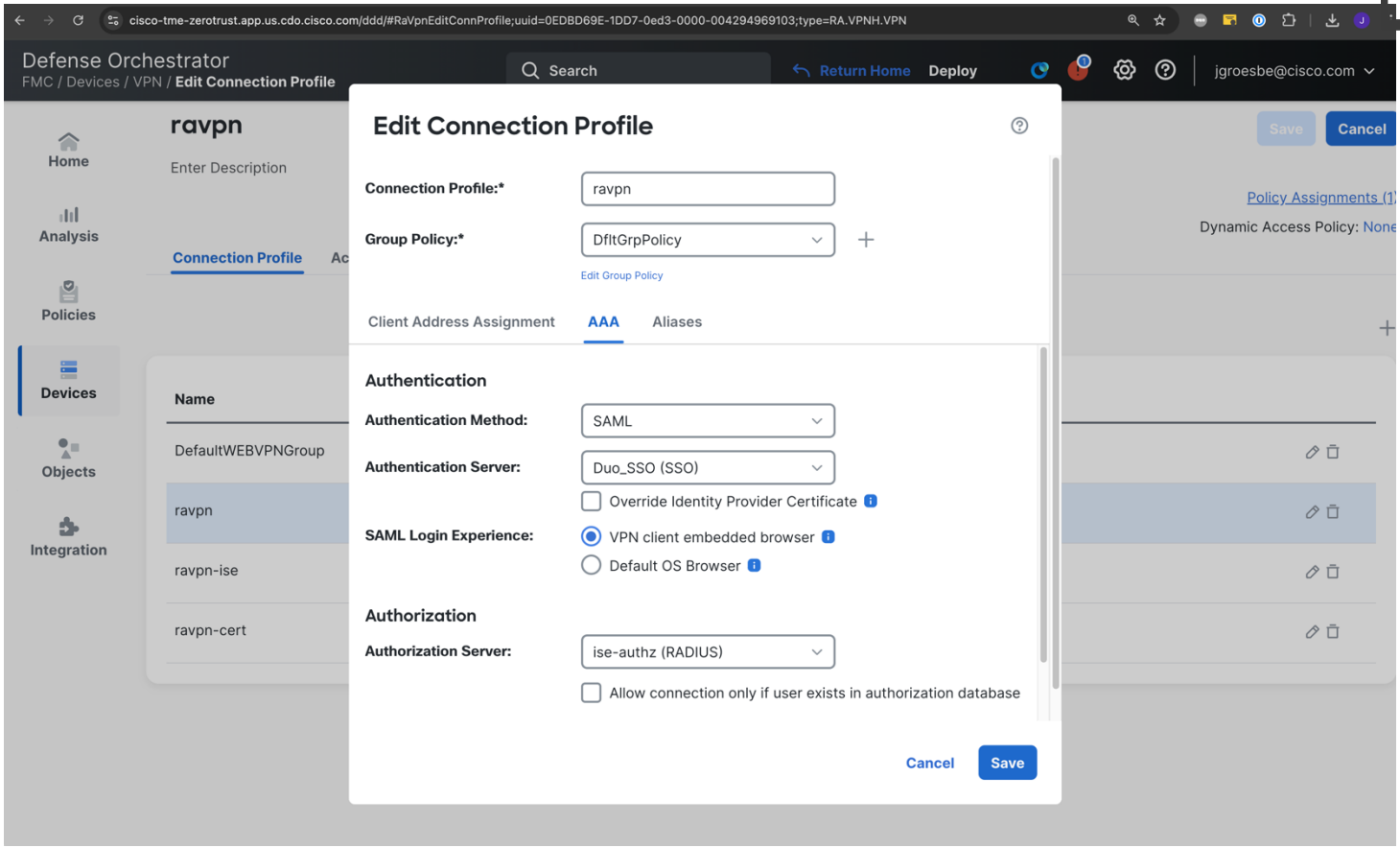


FTD VPN SAML conversion



FTD VPN SAML conversion



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- History & AAA
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- OAuth & OIDC
- WebAuthN & Passkeys
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- ID Needs Shades in Future
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Open Authorization (OAuth)

OAuth 2.0 is a security standard where you give one application permission to access your data in another application

v2 is most used, v1 still exists in the wild...

Open Authorization v2 (OAuth2)

- Open Standard
  - Token exchange protocol
  - Designed for application to application, **authorized by a user**.
  - User authorizes the application.
    - IdP issues a token (JSON Web Token [JWT]) to the app
    - Allows the app to make API calls on behalf of the user.

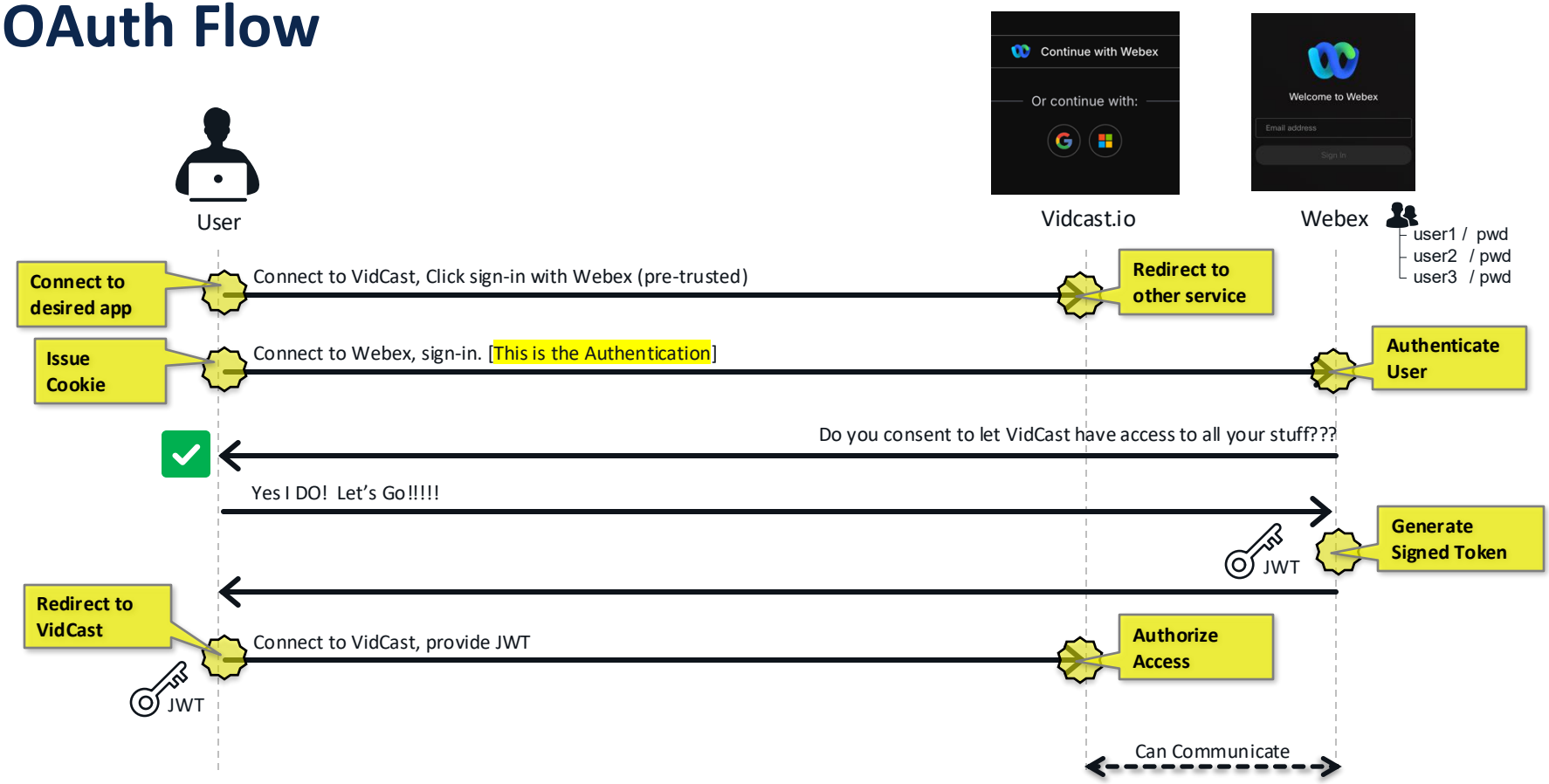
Key Concepts of OAuth

OAuth deals with authorization.

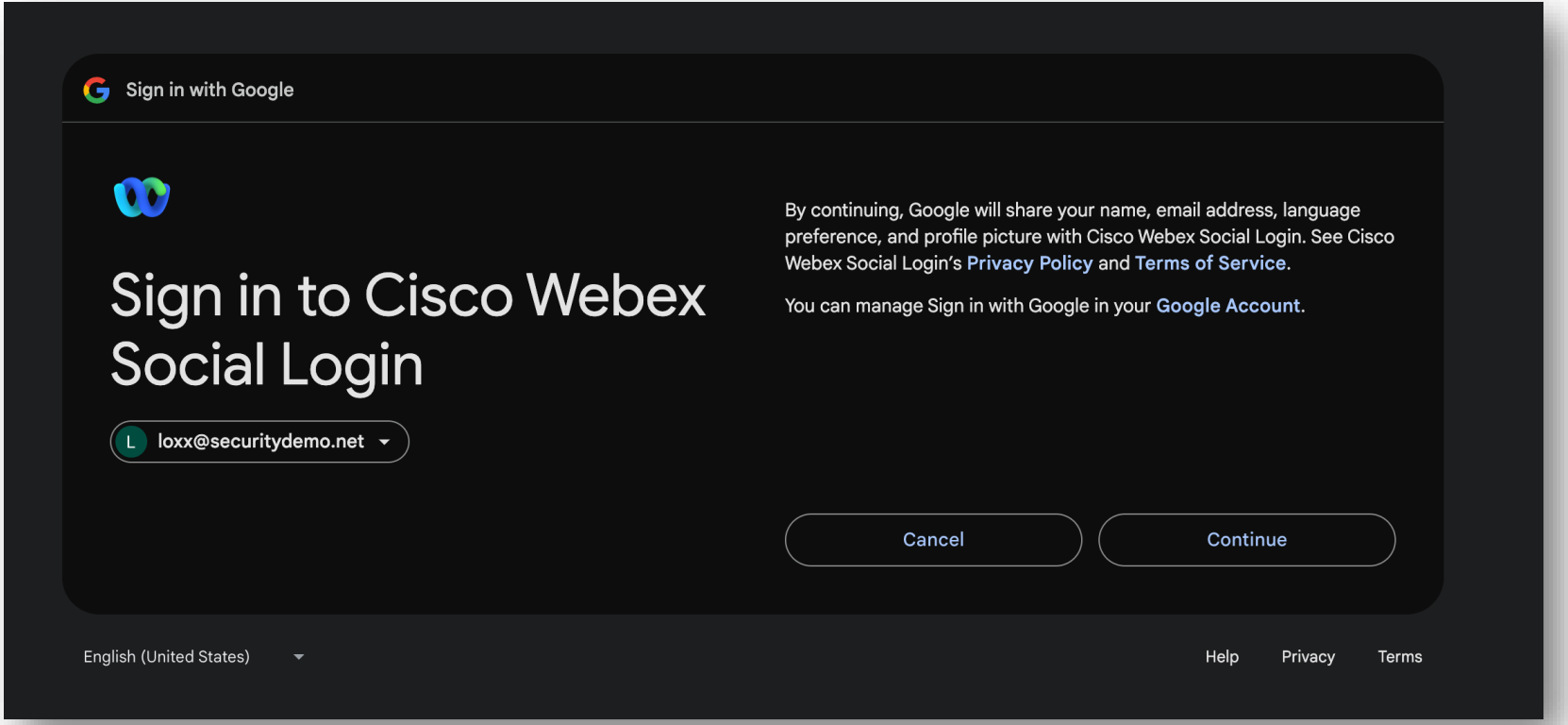
- **User Initiates**: A user wants to connect their account from one service (e.g., Twitter) to another (e.g., a third-party app).
- **Redirect to Provider**: The app redirects the user to the service provider's site (e.g., Twitter's login page).
- **Consent:** The user logs in and is asked to approve the app's request for specific data or actions.
- **Authorization Code**: If approved, the service provider gives the app an authorization code.
- **Token Exchange**: The app uses this code to get an access token from the service provider.
- **Access**: The app can now access the user's data or perform actions on their behalf using this token.

- **Tokens:**
  - **Access Token**: Accesses the user's resources. The app uses it in API calls.
  - **Refresh Token**: Gets a new access token when the current one expires, without needing user interaction again.
- **Advantages**:
  - **Security**: Users don't share their passwords with third-party apps.
  - **Flexibility**: Services can grant limited, revocable permissions.
  - **User Control**: Users can see and revoke permissions at any time.
- **Versions:**
  - **OAuth 1.0**: Introduced the basic framework but was complex and included cryptographic signing.
  - **OAuth 2.0**: Simplified the process, removed the need for cryptographic signing in most flows, and introduced different grant types (like authorization code, implicit, resource owner password credentials, client credentials).

OAuth Flow



Example of Consent



Open ID Connect (OIDC)

OIDC is a thin layer that sits on top of OAuth 2.0 to add login and profile information about the user into the exchange. This transforms the exchange to add authentication to OAuth2's authorization!

OIDC is now an alternative to SAML for SSO.

OAuth is App to App AuthZ.

Open ID Connect

- Wraps a framework around OAuth2 for user login, making it more appropriate for user single-sign-on.

OIDC Glossary

Relying Party - This is the application that Lee is logging into! It is the same as a Service Provider in SAML.

Resource Owner - This is Lee! Lee owns their identity, data, and controls actions performed on their account.

Client - The application that wants to access data or perform actions on behalf of the Resource Owner.

Authorization Server - An application that knows the Resource Owner and where the Resource Owner already has an account. This is called an *OpenID Provider* in OIDC!

Resource Server - An API or service that the client wants to use on behalf of the resource owner. This will sometimes be the same provider as the Authorization Server

OIDC Glossary

Redirect URI- Sometimes called the “Callback URL”, this is the URL that the Authorization Server will redirect the Resource Owner to after granting permission to the client.

Response Type - The type of information that the client expects to receive. The most common is “code”

Scope - The granular permissions that the client wants. These can be authorization-oriented (access to data or to perform actions) or identity-oriented.

Consent - The Authorization Server verifies with the Resource Owner that they would like to give the client the permission to use the scopes.

OIDC Glossary

Client ID - An ID that verifies the identity of the Client with the Authorization Server

Client Secret - A password that is shared between the Client and Authorization Server

Authorization Code- A temporary code the Client gives the Authorization Server in exchange for an Access Token

Access Token - A key that gives Client permission to request data or perform actions with the Resource Server on your behalf.

ID Token - A JSON Web Token or JWT that contains information about you, the Resource Owner, such as your name, ID, manager, or pretty much anything else in your user profile.

Claim - This is data in the ID Token! These will be AD or SAML IdP attribute:value pairings.

OIDC compared to SAML

For Your Reference

- SAML is older than OIDC.
- SAML transmits user attributes using XML format and browser redirects. while OIDC uses JSON format and communicates directly from the client application to the OpenID Provider.
- OIDC enables complete machine-to-machine authentication.
- OIDC is considered to be more secure*
  - *Depending on which grant type is being used

Which should you choose?

- Often won't have a choice as not many application vendors implement both!
- OIDC is being increasingly common for new integrations.

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Web Authentication (WebAuthN)

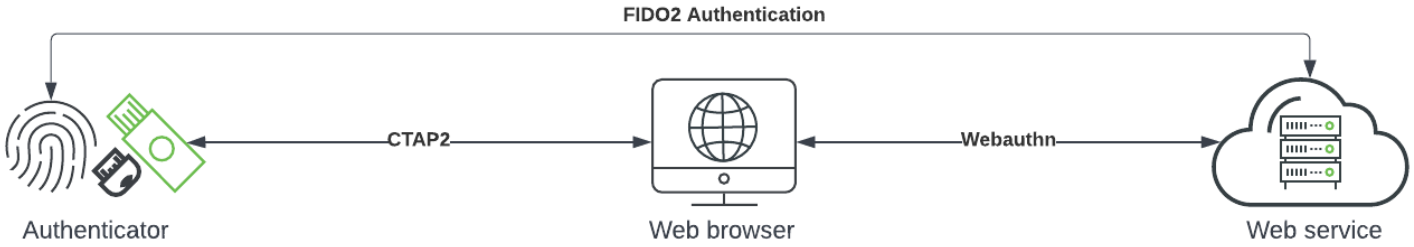
Web Authentication (WebAuthN)

- An API websites use to talk to web browsers
- An API spec for accessing public key credentials
- Developed by FIDO Alliance, ratified by the W3C
- Manages both registration and authentication
- Can be used for primary or secondary authentication

WebAuthn.io

FIDO2 Authentication

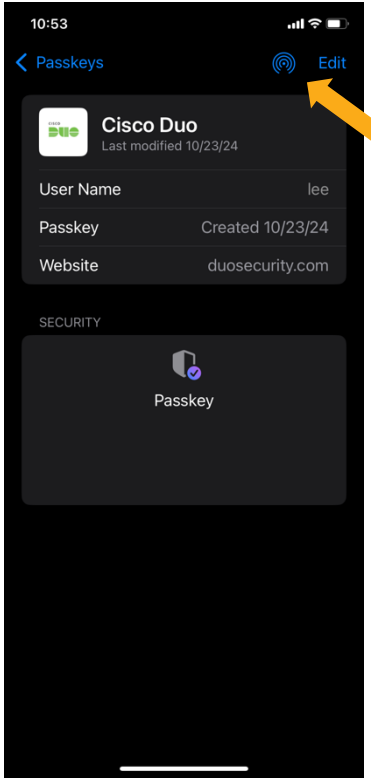
- Developed by FIDO alliance
- WebAuthN + Client to Authenticator Protocol v2 (CTAP2)
- CTAP: API for browser to authenticator communication
- Can be used for MFA or password-less



Passkeys

- Passkeys are essentially just a new (and easier) name for WebAuthn + FIDO2 credentials
- Passkeys, however, don’t have to just be device bound
- Shared passkeys make things a whole lot easier for end users
  - Credentials can be synced using secure methods (icloud keychain/passwords app, Google password manager, etc)
- There ‘may’ be security concerns with sharing…. Think personal icloud account across possibly work AND personal device
- AND…

Shared Passkeys



Airdrop!

To ANYONE!

Authentication

Authenticator

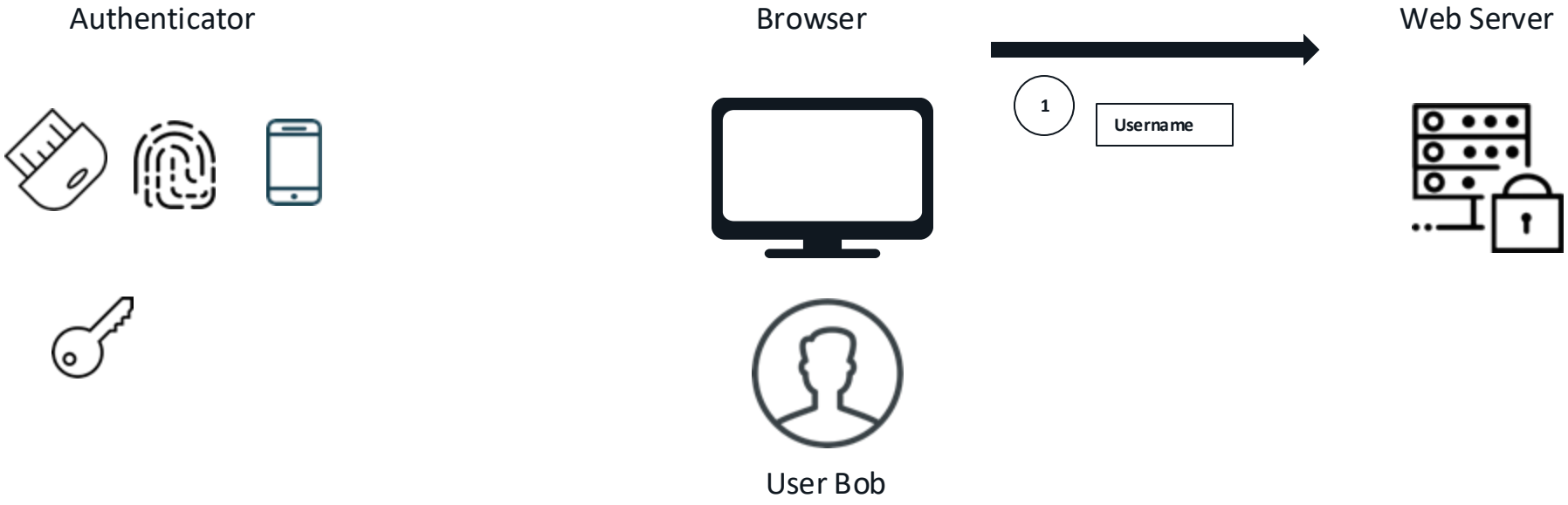
Private Key

Browser

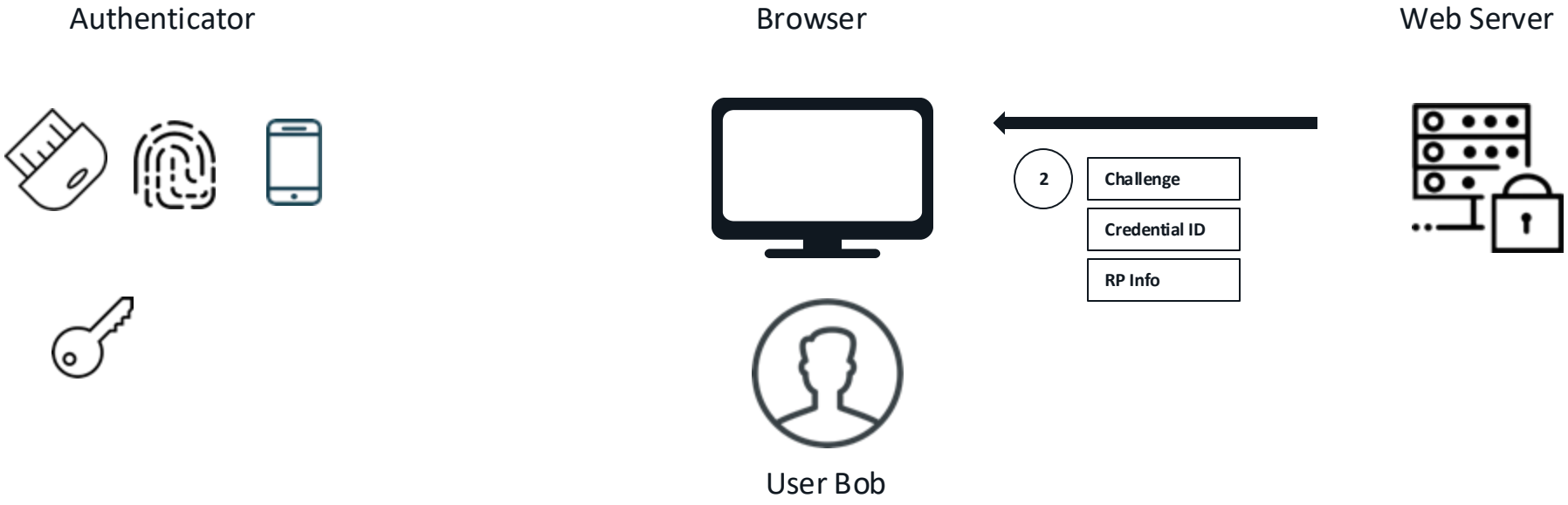
User Bob

Web Server

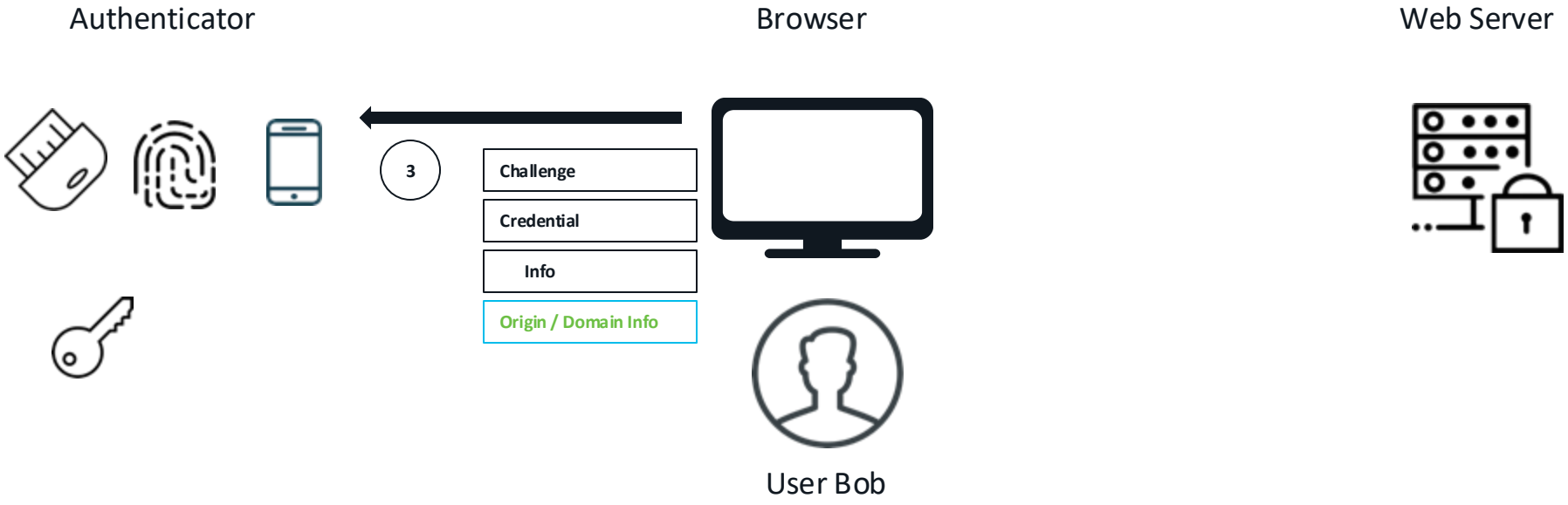
Authentication : Send User Info



Authentication : Challenge



Authentication : Challenge + Domain



Authentication : User Verification

Authenticator

4

User Verification

- Perform Biometric
- Security Key Gesture
- Mobile Push

Browser

User Bob

Web Server

cisco Live!

Authentication : User Verification & Assertion

Authenticator

4

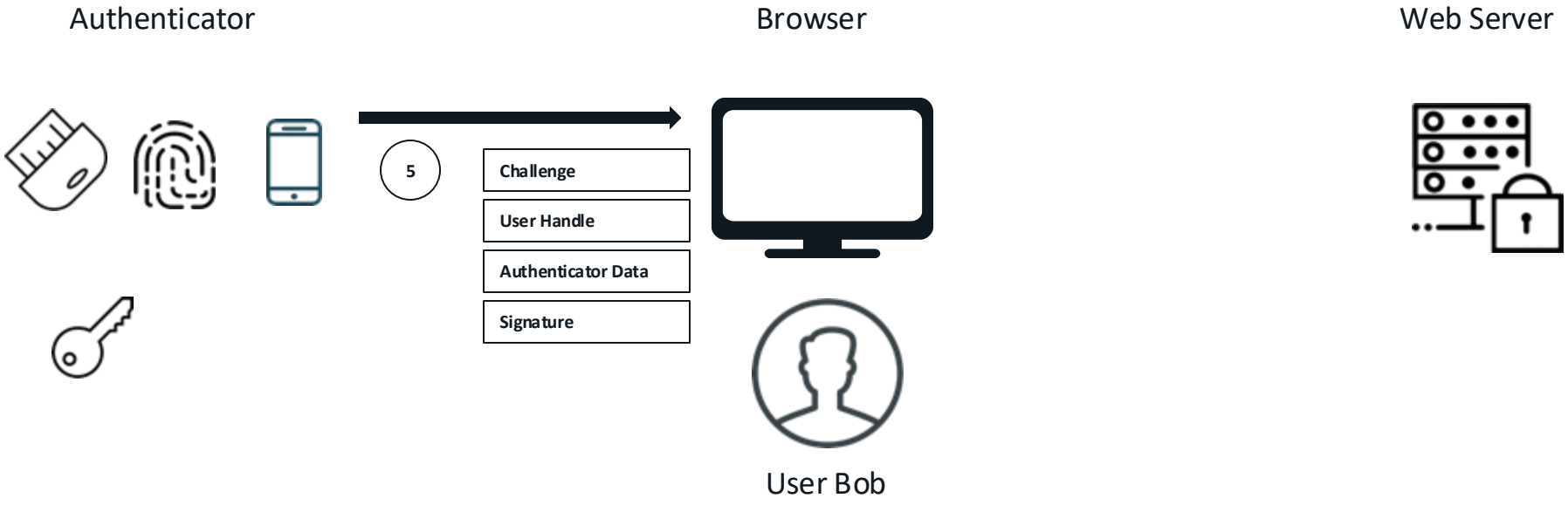
Signed Assertion

Browser

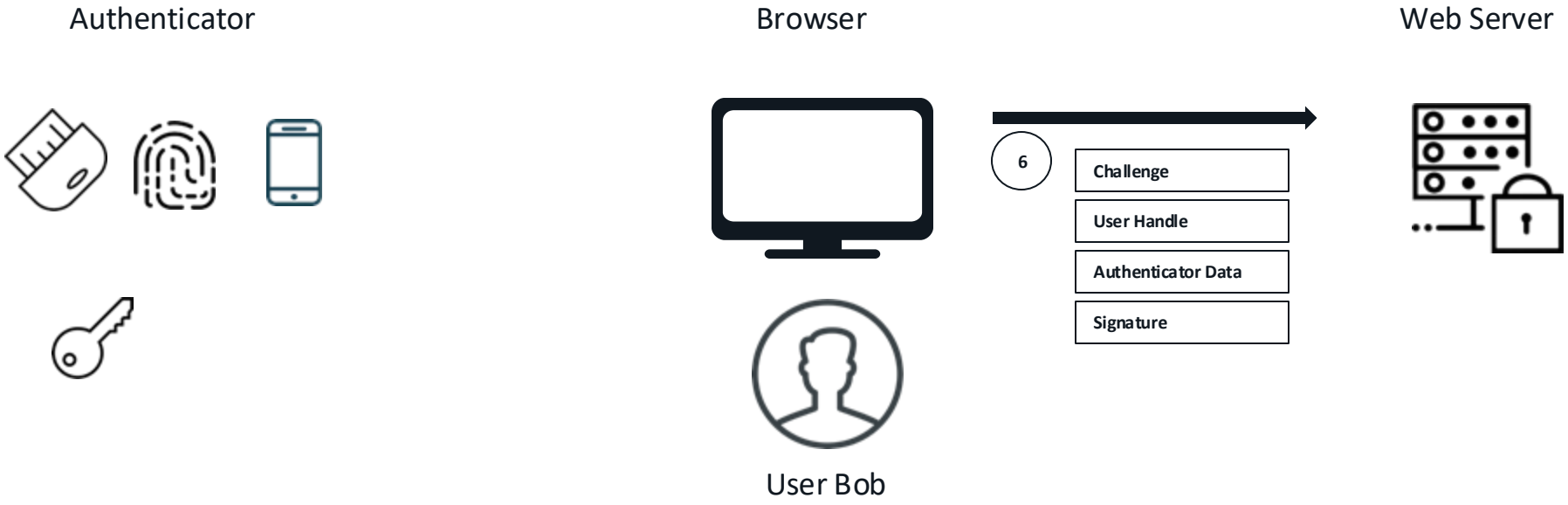
User Bob

Web Server

Authentication : Authenticator Assertion



Authentication : Challenge Response



Authentication : Success!

Authenticator

Browser

User Bob

Web Server

7

Verify Signature

Advantages of WebAuthn : Asymmetric Cryptography

Authenticator

Browser

Web Server

Private Key

Authentication leverages an asymmetric key pair.

Anyone can have the public key, while the private key is never sent or shared.

Asymmetry means more security!

User Bob

Advantages of WebAuthn : Phishing

Authenticator

Private Key

Browser

No password used during the authentication experience.

You can't phish credentials if they aren't used at login!

Web Server

Advantages of WebAuthn : Man In the Middle

Authenticator

Browser

Web Server

The Private Key never leaves the authenticator.

User Bob verifies identity to unlock the Private Key at auth time.

Meaning there is no sensitive information transferred that can be intercepted.

You can't steal information that isn't being sent!

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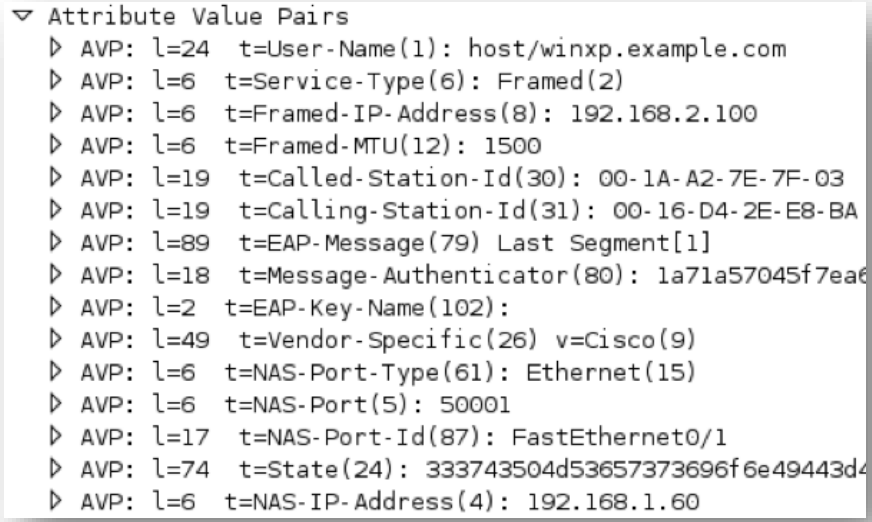
Gotcha’s
(it’s not all Sunshine & Roses)

Long Live the King: RADIUS

- With RADIUS: there was structure:
- Attribute Value Pairs (AVPs)
  - i.e.: User-Name: [username]
  - The RADIUS server knew what to expect
  - It could be extended with Vendor Specific Attributes (VSAs).



SAML / OAuth

- SAML & OAuth: part of the Token but can have many different schemas
- Must program each side to know what field is
- Dictate the schema via URL
  - Ex: Use “email” as username
  - Defined in the metadata

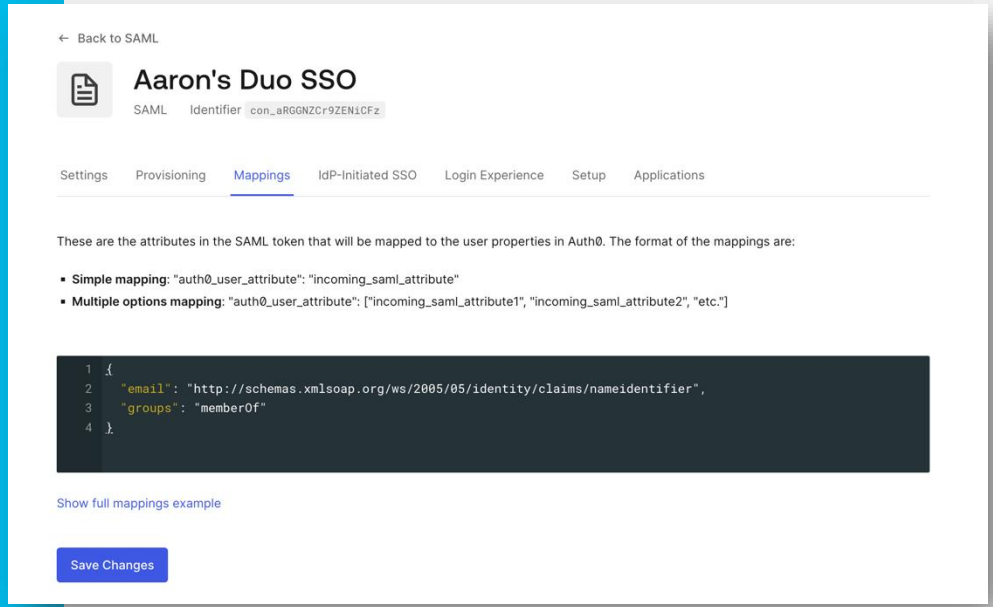
```
! – Example: XDR UI App OAuth Token
{
  "https://schemas.cisco.com/iroh/identity/claims/user/email": "loxx@securitydemo.net",
"https://schemas.cisco.com/iroh/identity/claims/user/idp/id": "sxso",
  "https://schemas.cisco.com/iroh/identity/claims/user/nick": "Aaron Woland",
  "email": "loxx@securitydemo.net",
  "aud": [
    "iroh-ui",
    "login"
  ],
  "https://schemas.cisco.com/iroh/identity/claims/user/role": "admin",
  "sub": "9992027f-a88b-4b0e-8a38-58ad317c58af",
  "iss": "IROH Auth",
"https://schemas.cisco.com/iroh/identity/claims/scopes": [
    "event:read",
    "cisco/feature-flag/xdr",
    "insights",
    "vault/configs:read",
    "integration",
    "private-intel",
    "admin",
    "profile",
    "inspect",
    "asset",
! – SNIP
    "ao"
  ],
  "exp": 1731003921,
  "https://schemas.cisco.com/iroh/identity/claims/oauth/client/name": "Threat Response",
  "https://schemas.cisco.com/iroh/identity/claims/oauth/user/id": "9992027f-a88b-4b0e-8a38-
58ad317c58af",
  "https://schemas.cisco.com/iroh/identity/claims/org/id": "2e0e9eaf-eaf7-4449-9c07-
9fb1828aec78",
  "https://schemas.cisco.com/iroh/identity/claims/oauth/grant": "login",
! - SNIP
}
```

Lack of Standards / Easy Behaviors

Example is Auth0, a CIAM

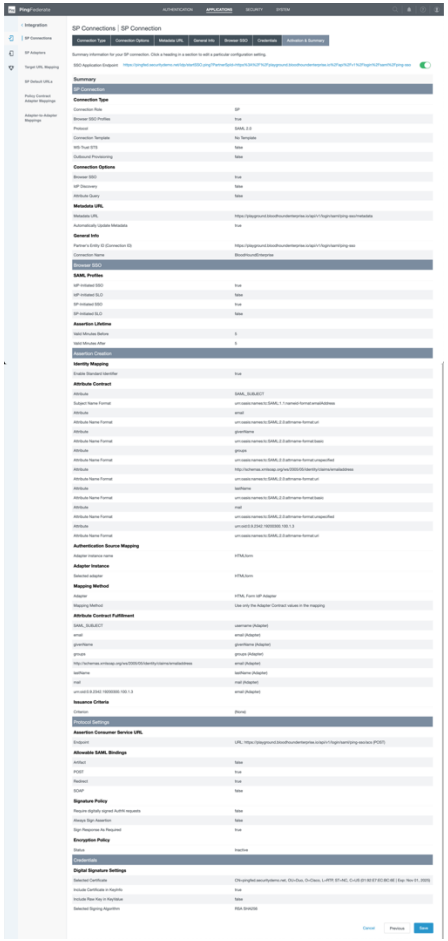
Integrating to a SAML IdP, it requires me to write this mapping out manually.

- Define which schema to figure out email.
- Define which attribute to use to find groups.



Lack of Standards / Easy Behaviors

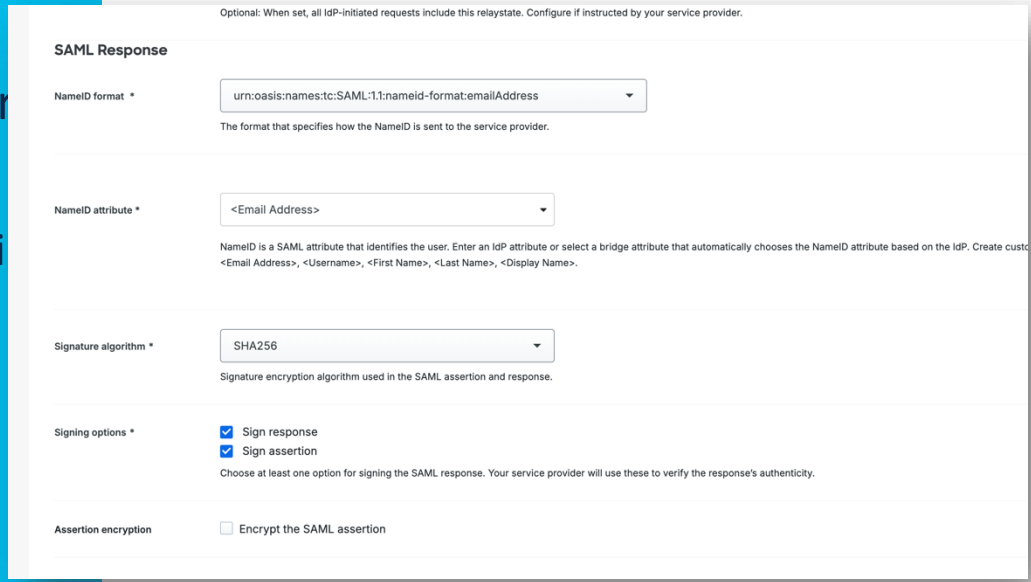
- Can get REALLY complex
  - This shows a powerful, but complex IDP
    - Each & everything is customizable
    - There aren't really any preconfigured drop downs, etc..



Lack of Standards / Easy Behaviors

Some Vendors try to make it easier (ahem: Duo)

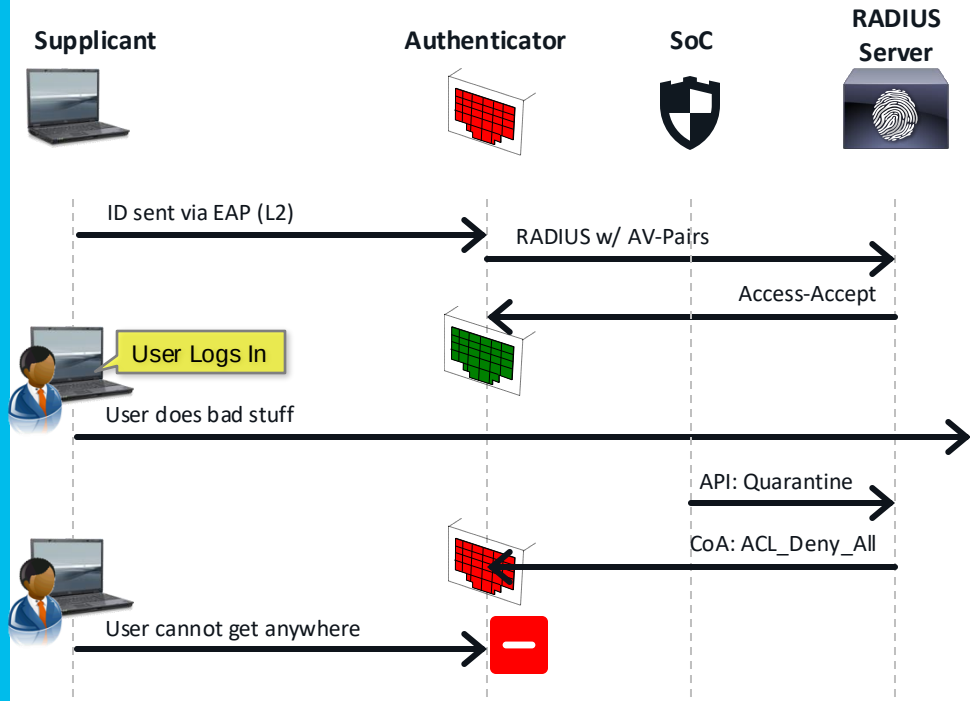
- Supported schemas are selectable via a drop down.



Change of Authorization (CoA)

Described in **RFC 3576** and its successor **RFC 5176**

- Allows RADIUS server to disconnect or force other change in the authorization status of a user/endpoint.
  - Disconnect
  - Port-bounce
  - Re-Authenticate
  - Apply ACL



Continuous Authorization Evaluation Protocol (CAEP)

- Designed for real-time access control adjustments
  - i.e: Change of Authorization
- Meant to overcome the AuthN once & AuthZ until token expires problem

Shared Signals

- Enables sharing of security-related information across different services or systems
  - Kind of like STIX, but not.
  - Because we have to re-invent everything in Web AAA
- Used with CAEP for identity-related security events

Requires Human Interaction

- SAML, OAuth & OIDC
  - Are interactive
  - Require someone to click objects, or input usernames to obtain the token.
  - Makes coding scripts more tricky
    - Think: Python script to automate certain actions
    - Once you have the Token it’s easy, but how do you get it via script?

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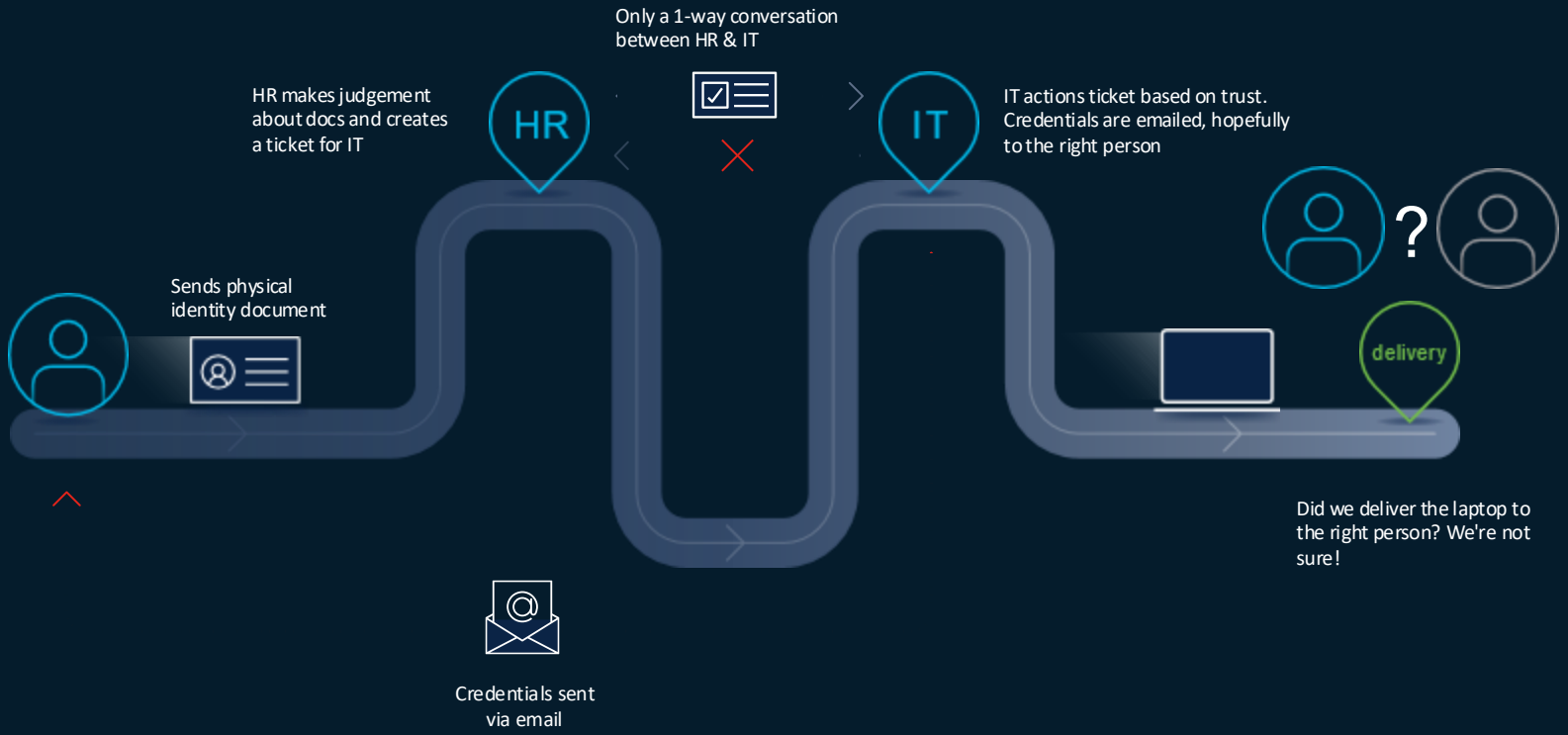
Identity's Future is so bright, it needs shades!

Verifiable Credentials – Why?

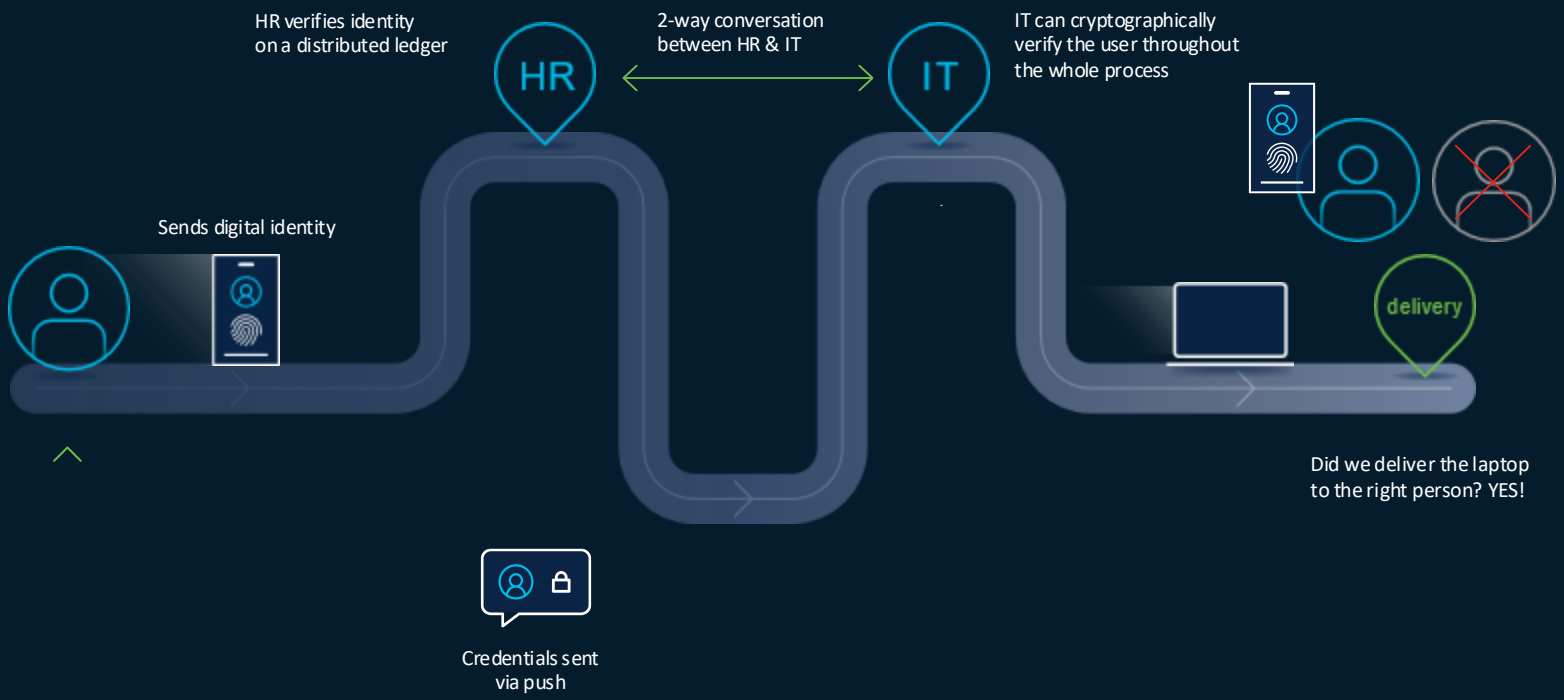
“The electric light did not come from the continuous improvement of candles.”

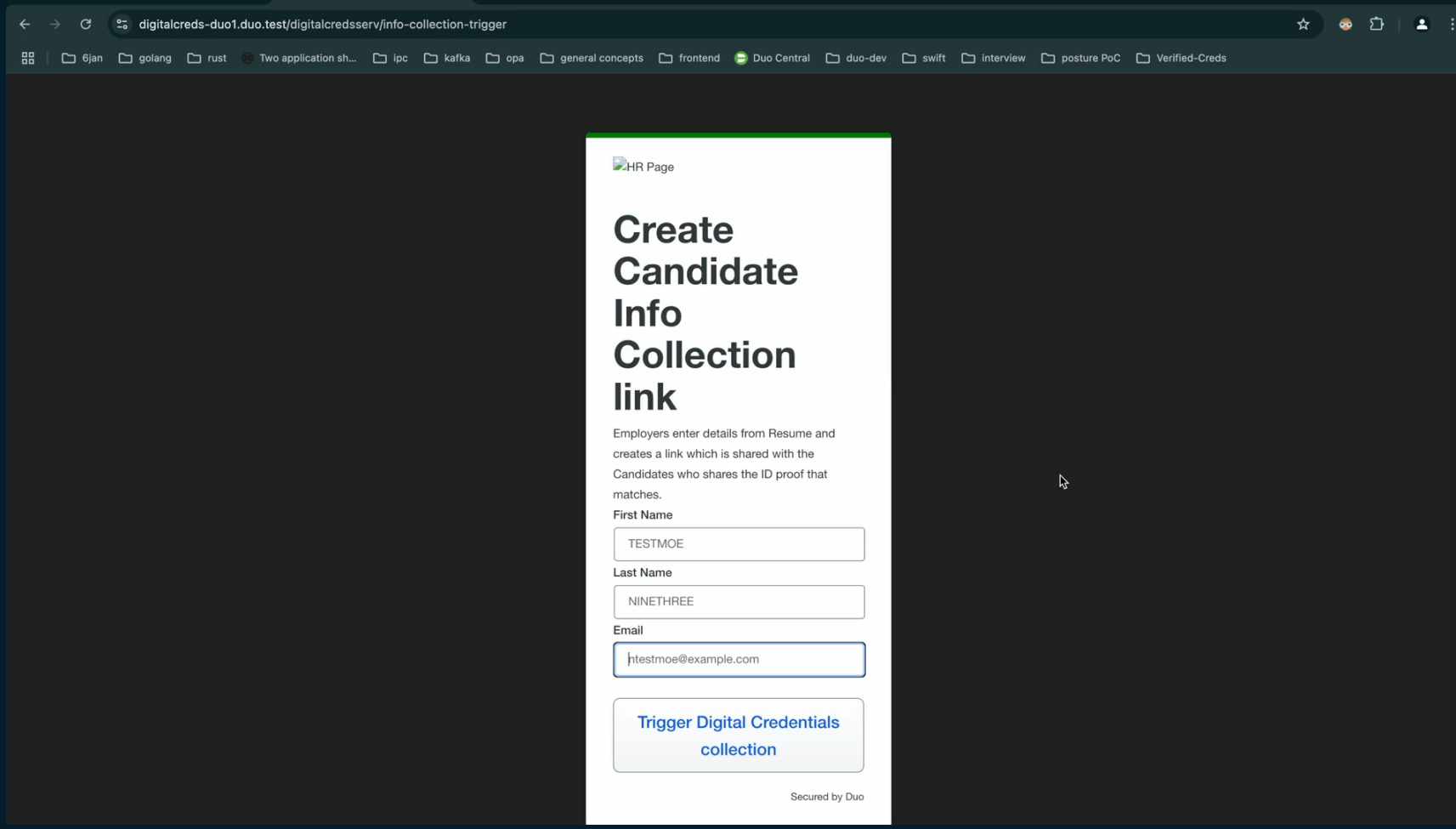
- Oren Harari

Jill onboards at ACME - Today



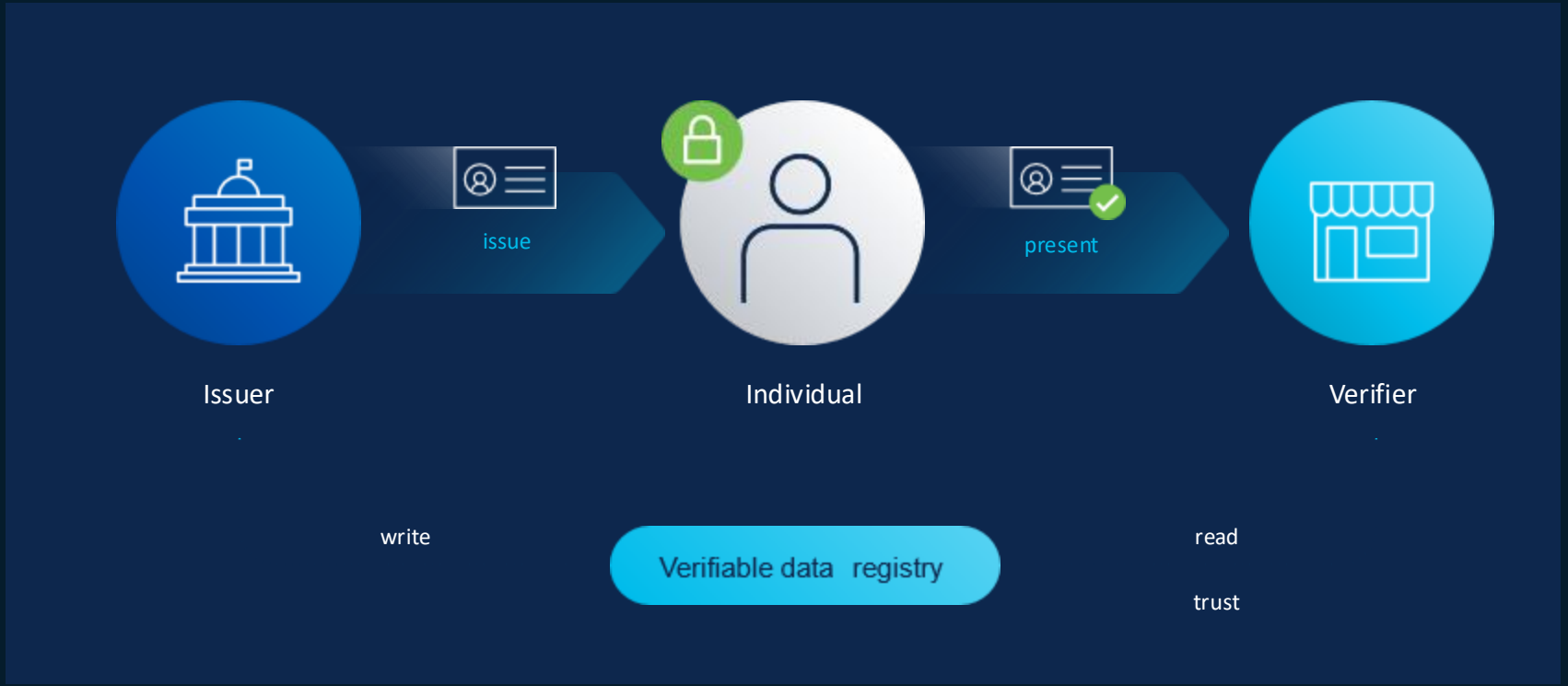
Jill onboards at ACME - Tomorrow



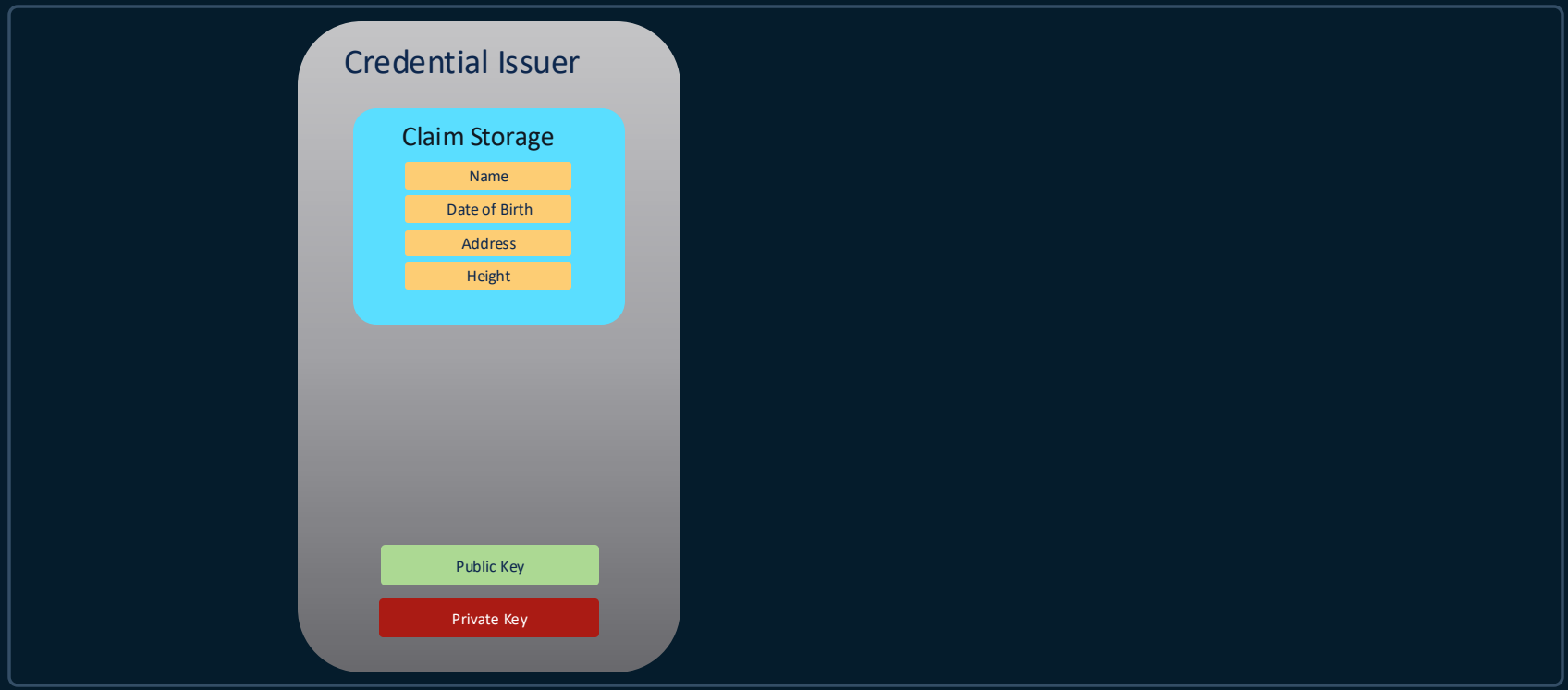


Verifiable Credentials – What?

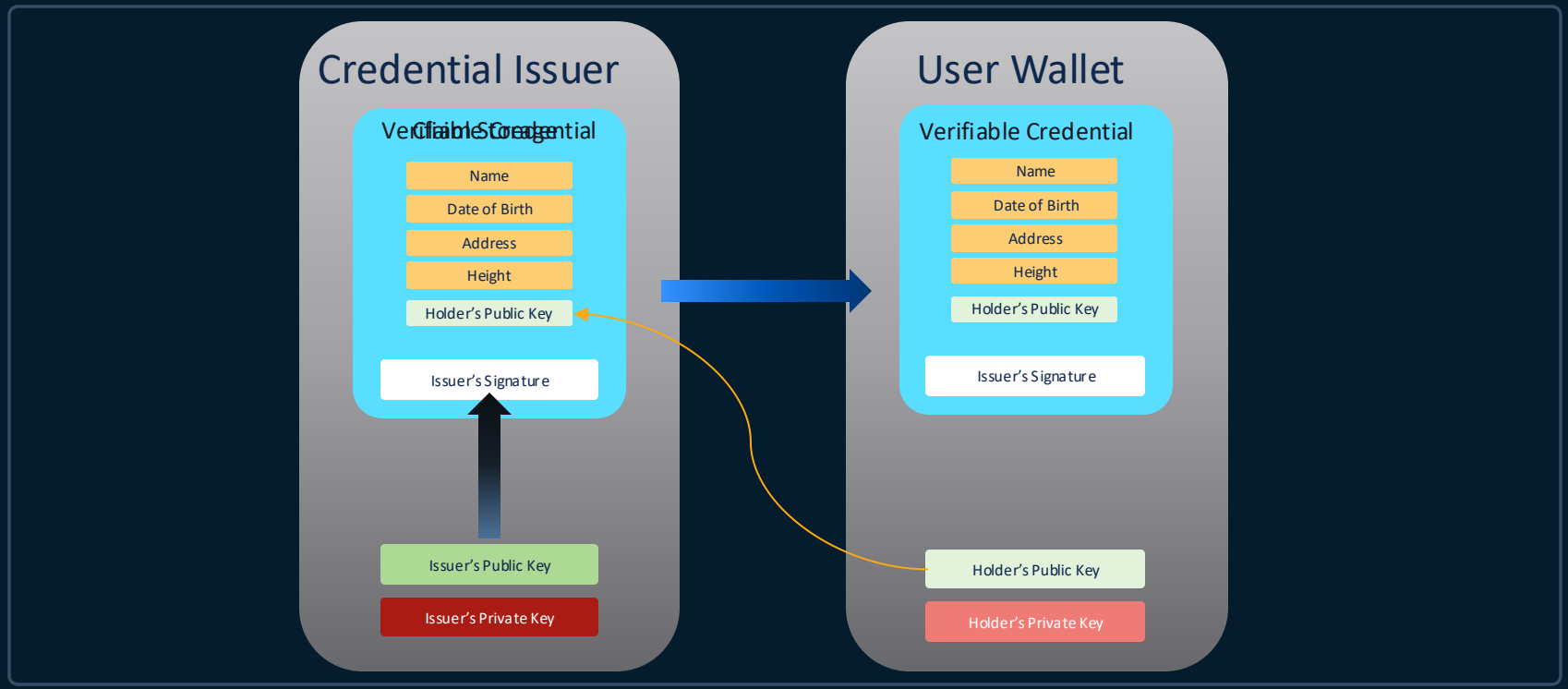
Verifiable Identity- High level flow diagram



Credential Verification – How does it work?



Credential Verification – Issuance



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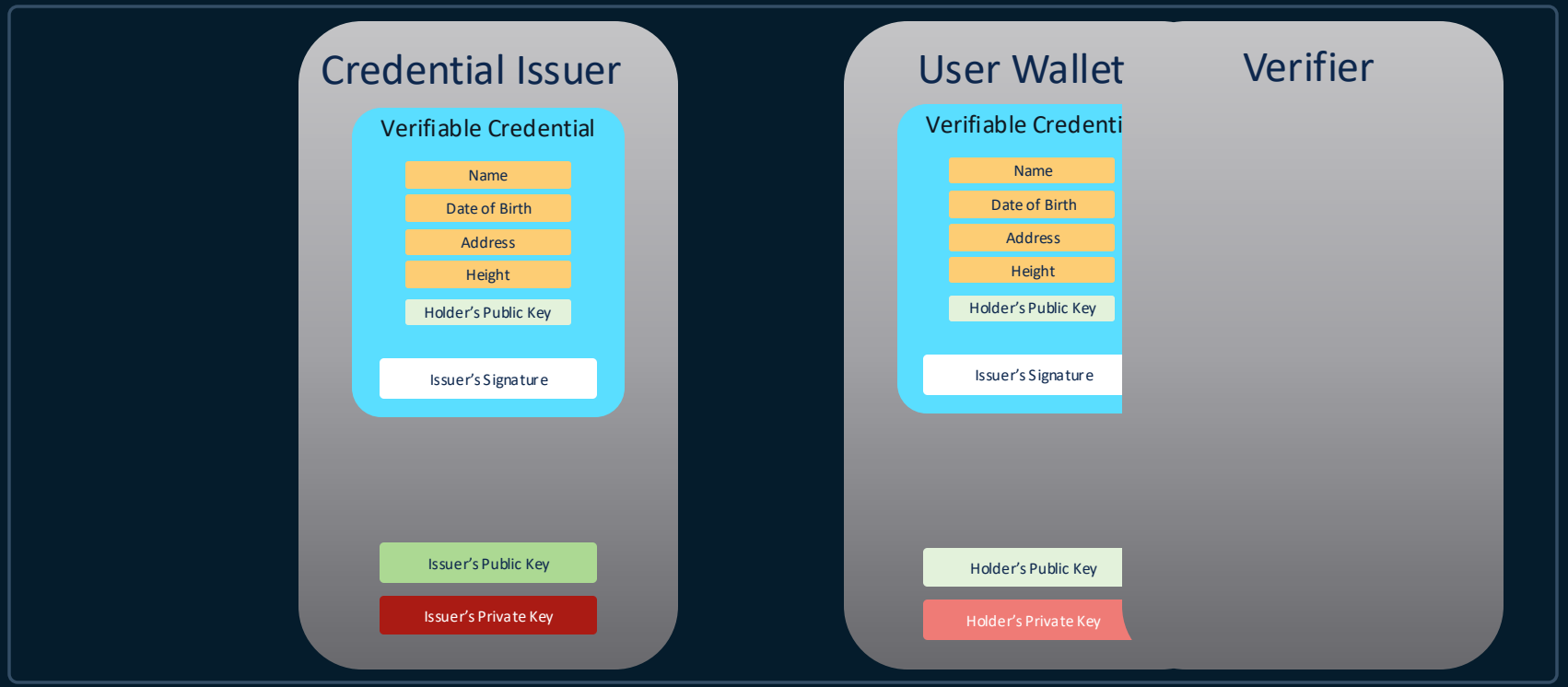
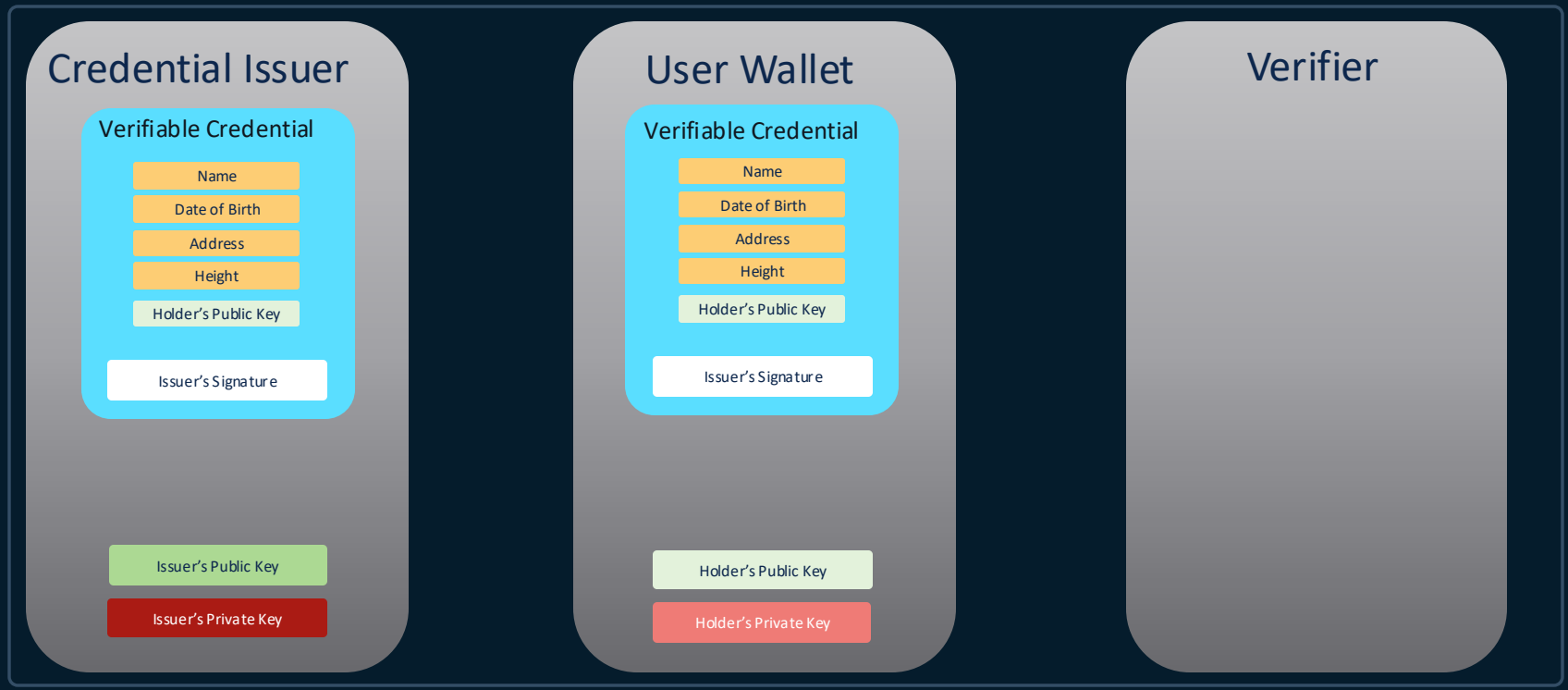
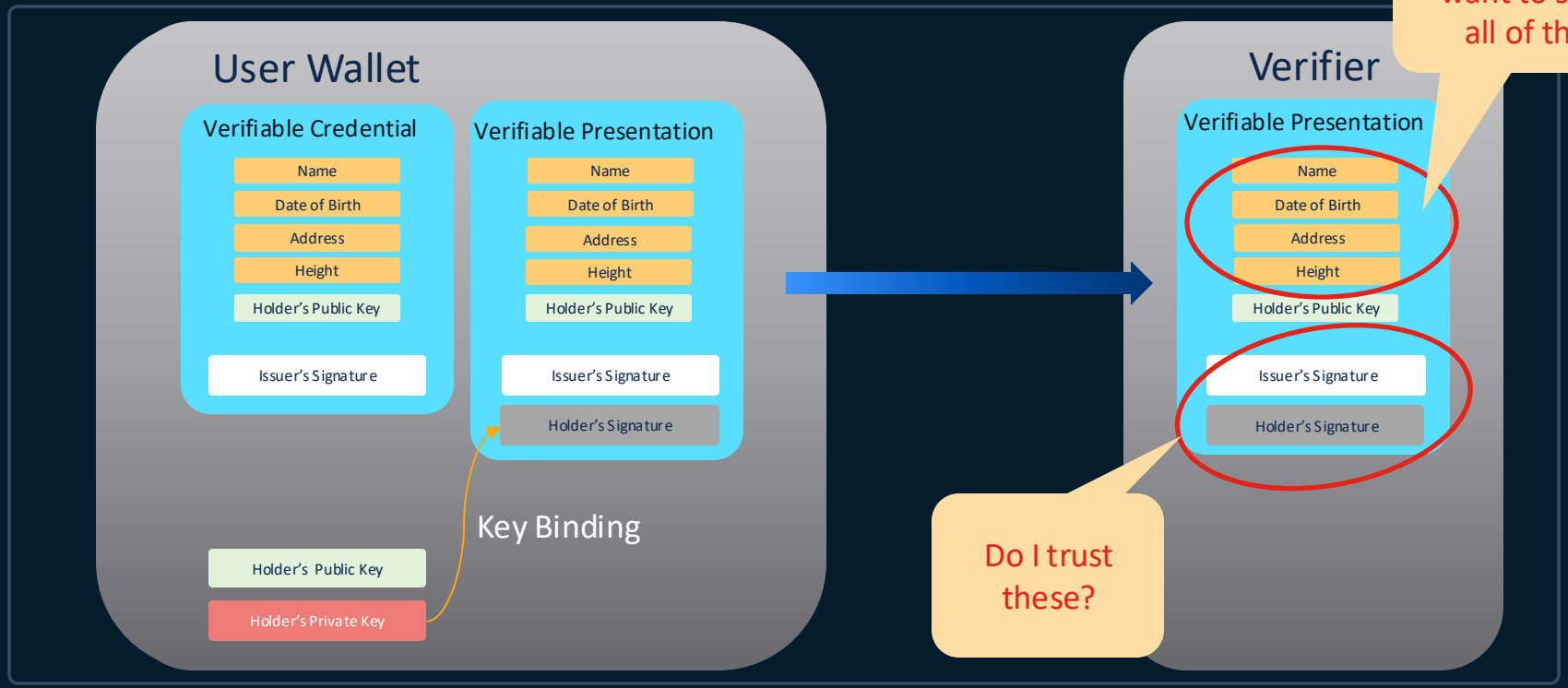


Credential Verification – Presentation

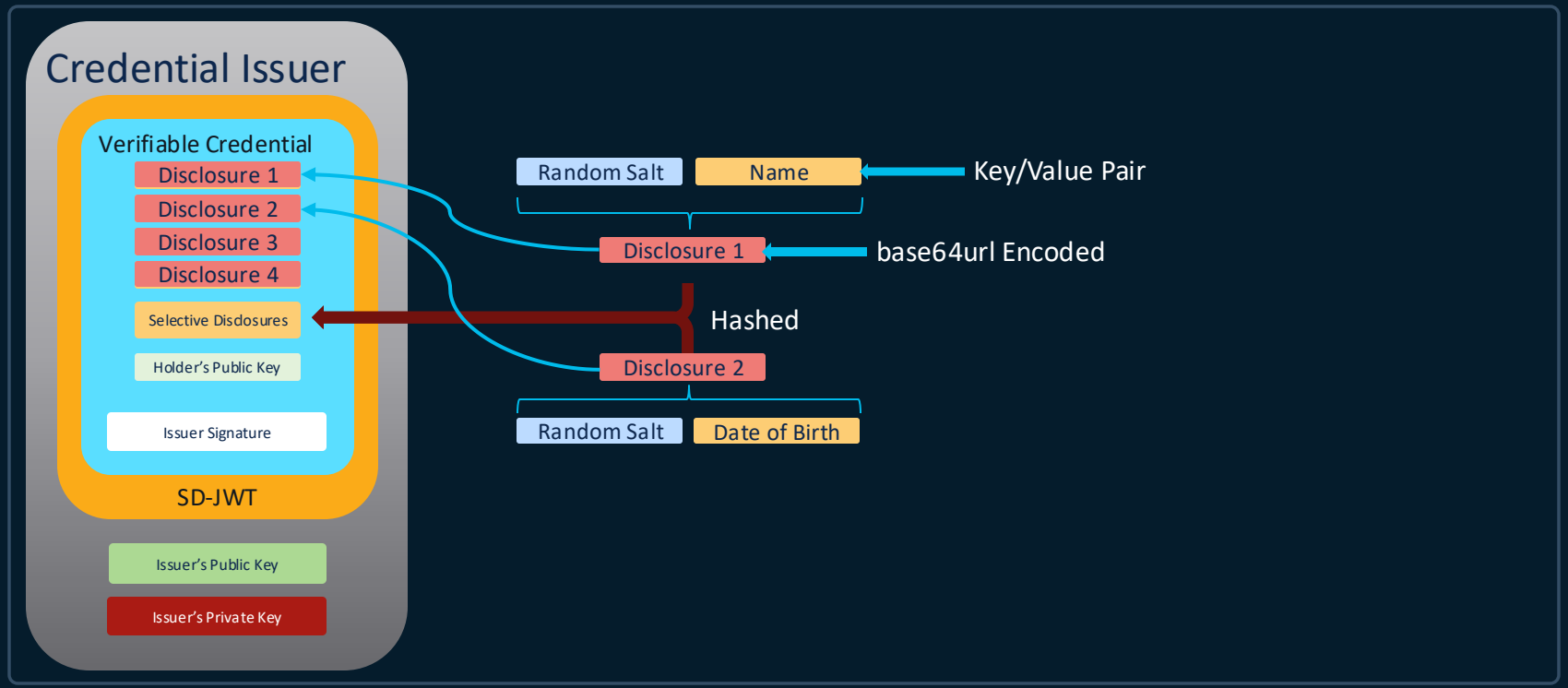


Credential Verification – Presentation

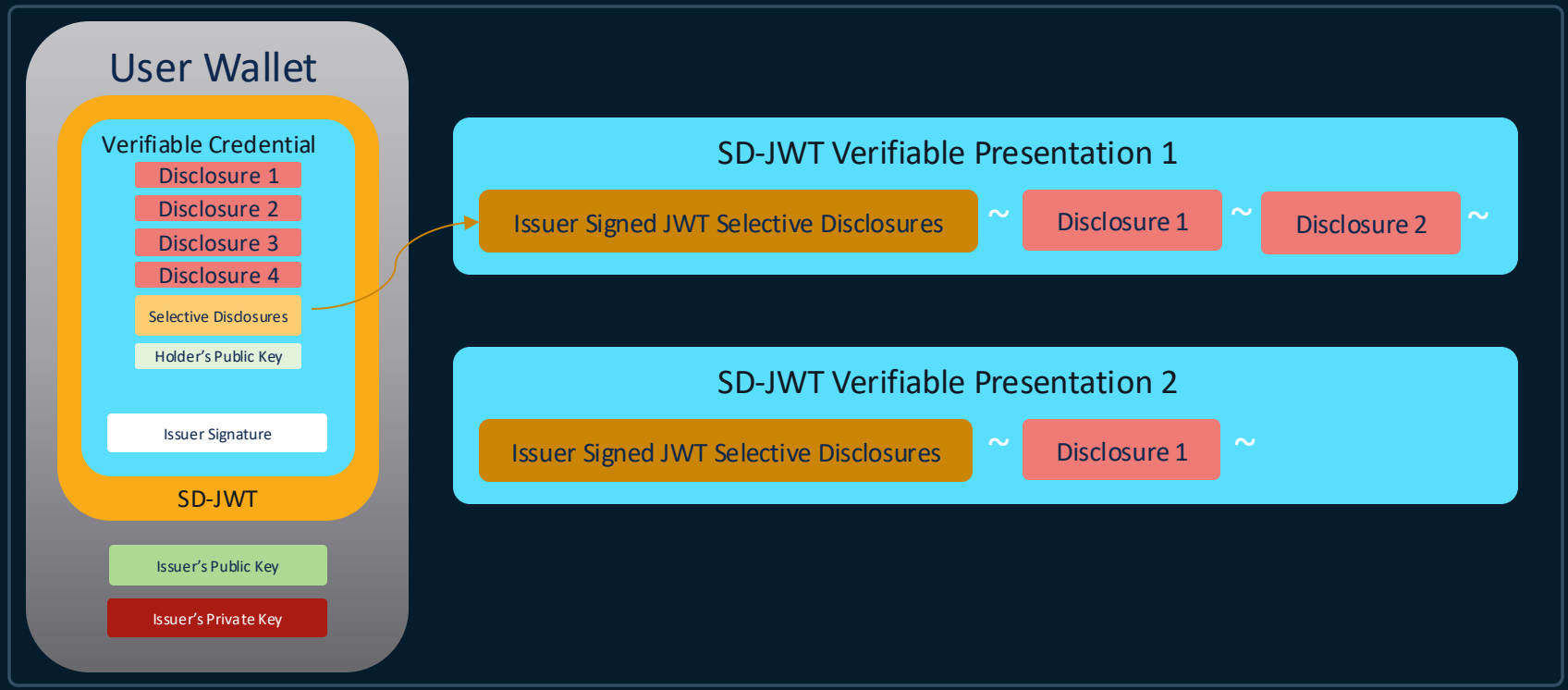


Credential Verification – Selective Disclosure

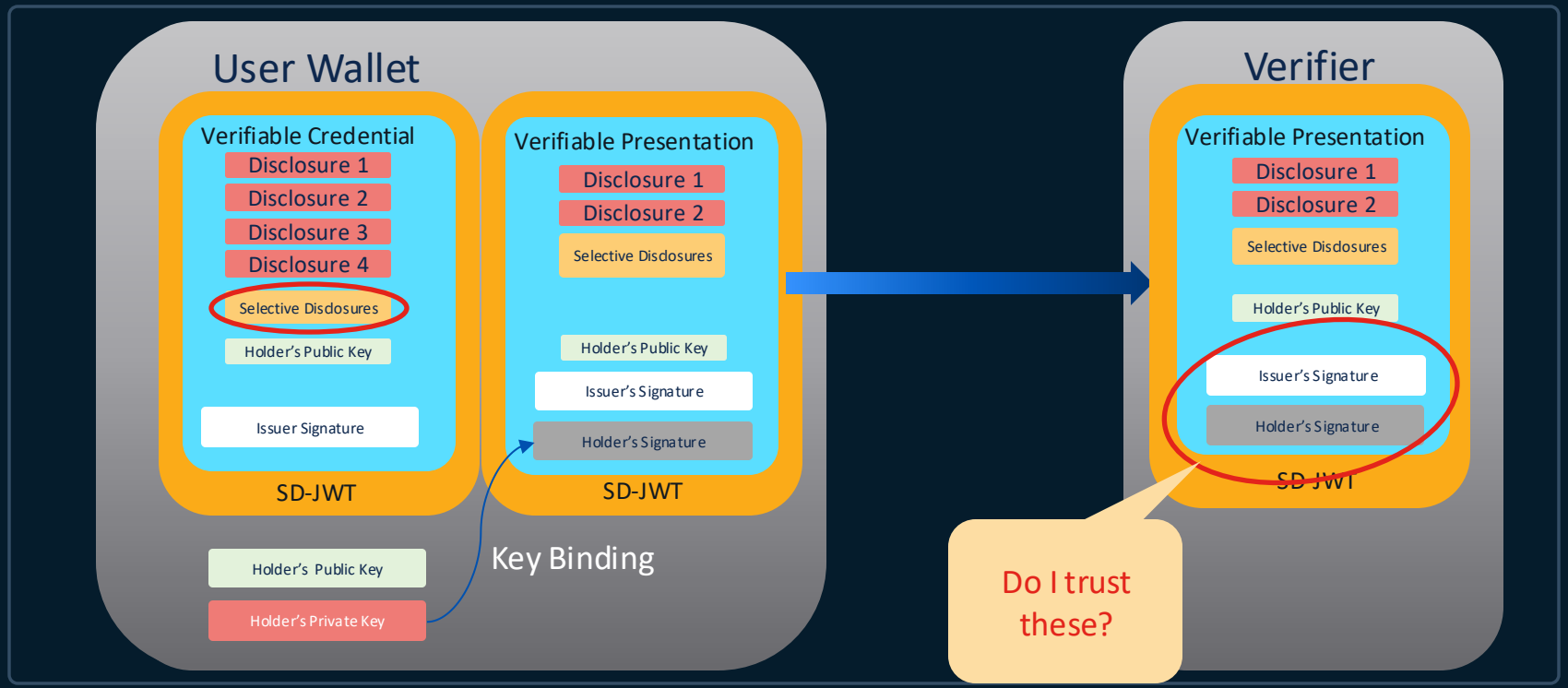
Credential Verification – Selective Disclosure



Credential Verification – Selective Disclosure



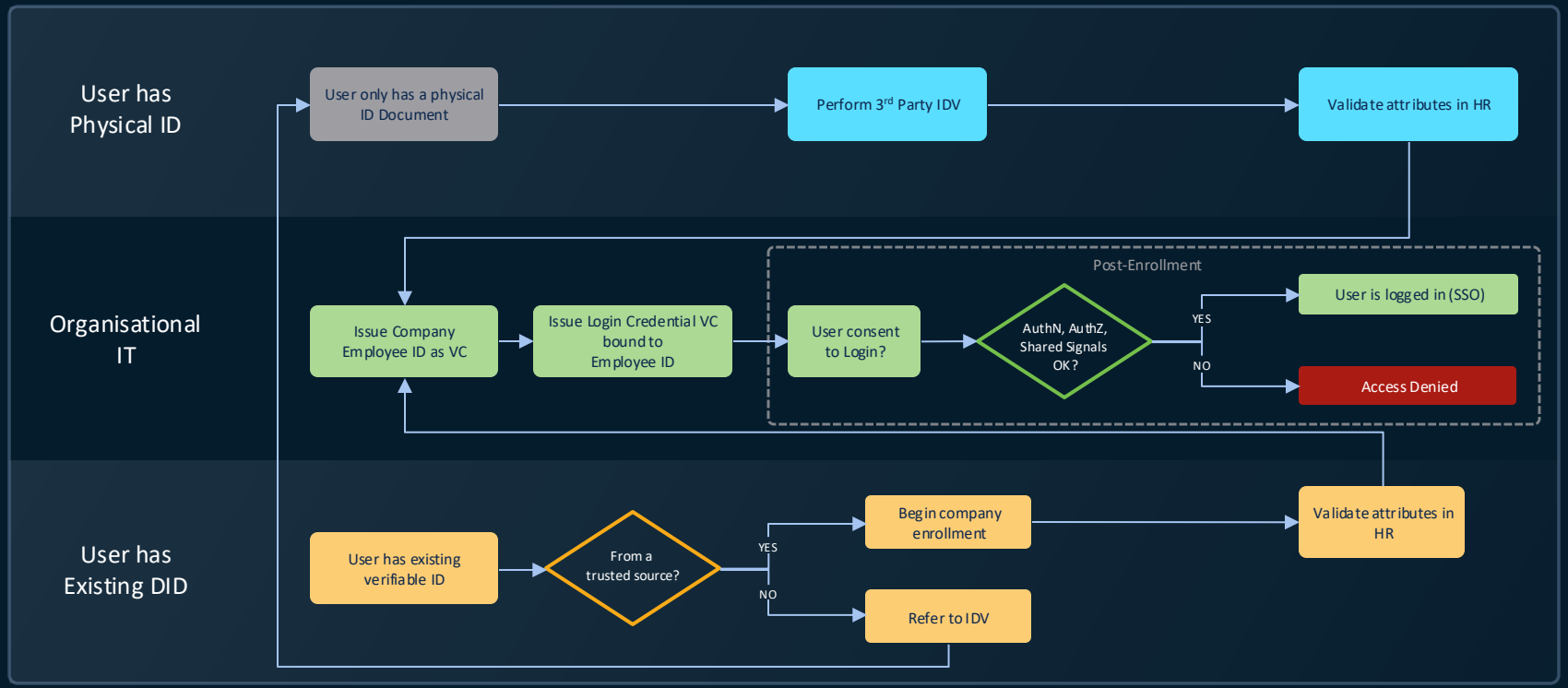
Credential Verification – Selective Disclosure



Verifiable Credentials – How?

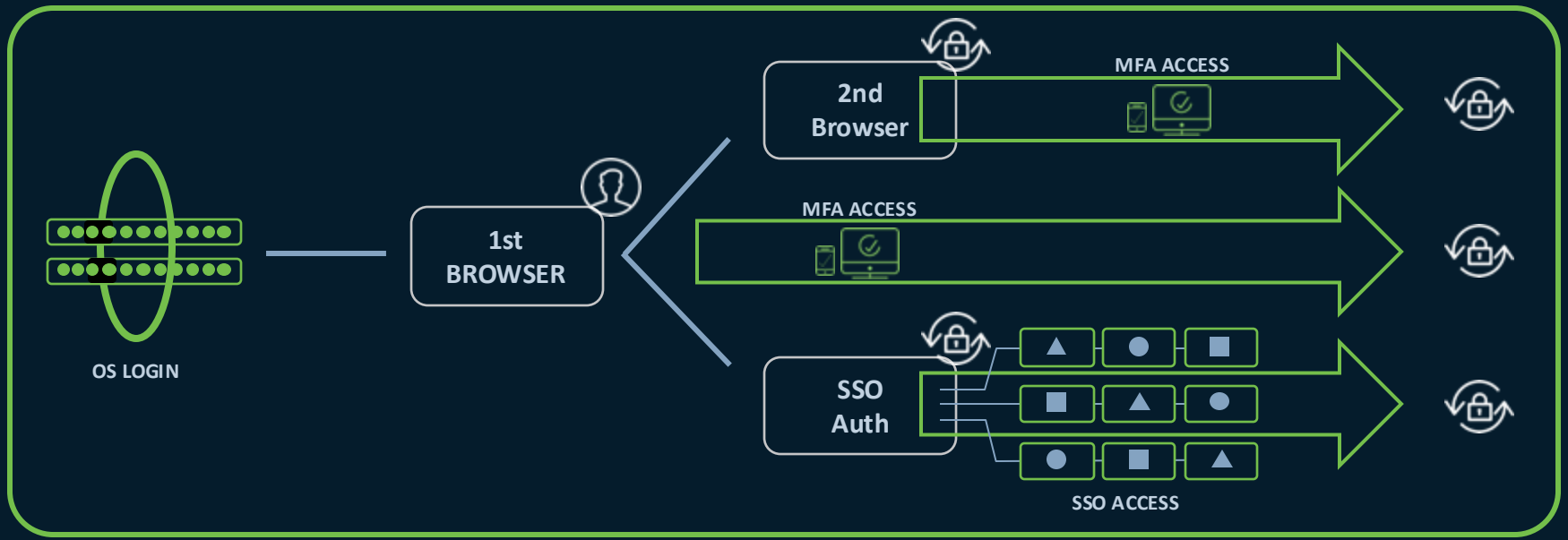
Digital Identity – How do we get onboard?

Digital Identity On-ramps



Last piece of the puzzle

Login Once, Access Everything Securely



	Interactive authentication - end user friction
	Authentication brokered through device, Duo, and Duo Desktop

Remembered device session border

Demo Video: Complete Single Sign On with Duo Passport

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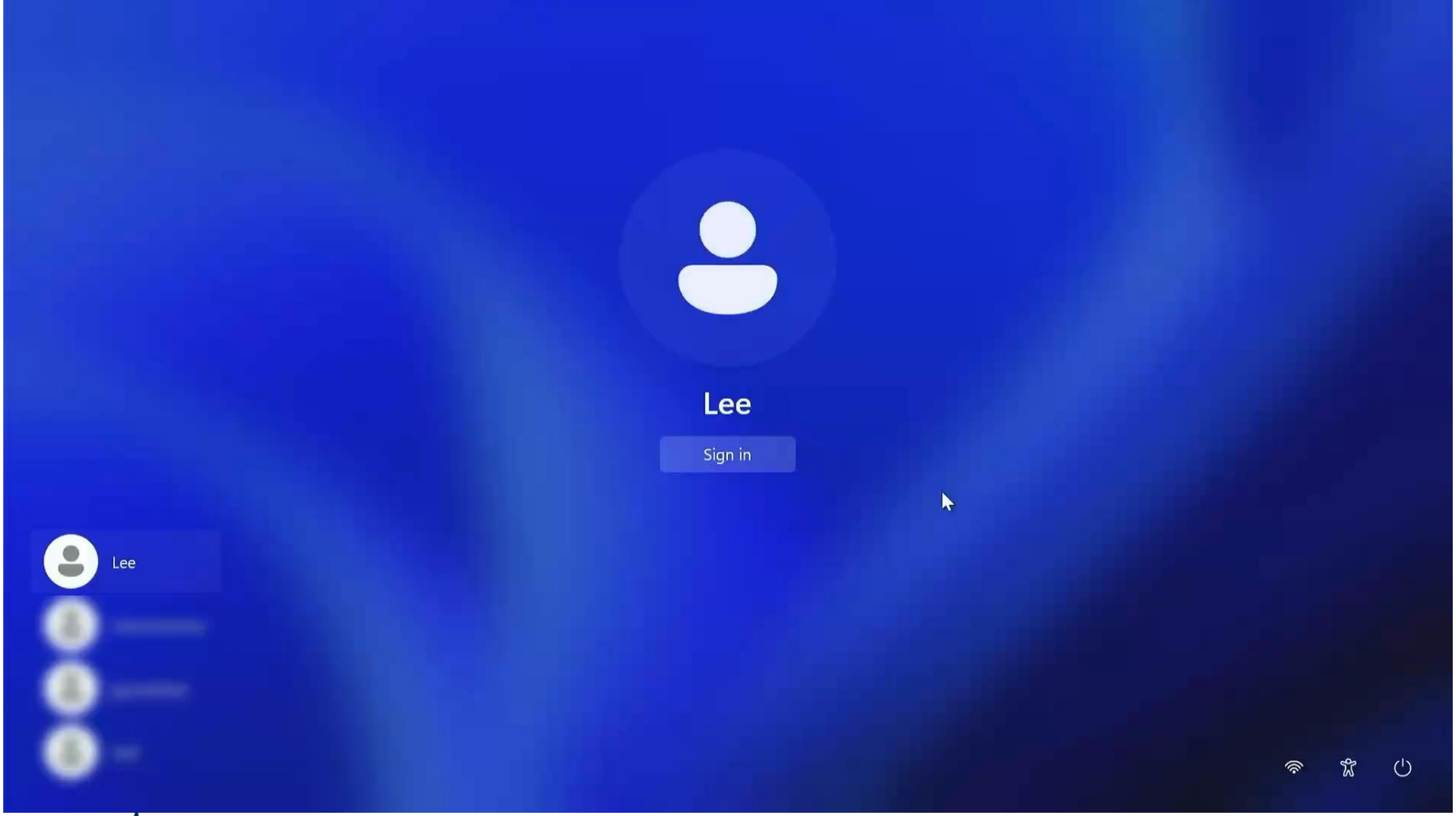
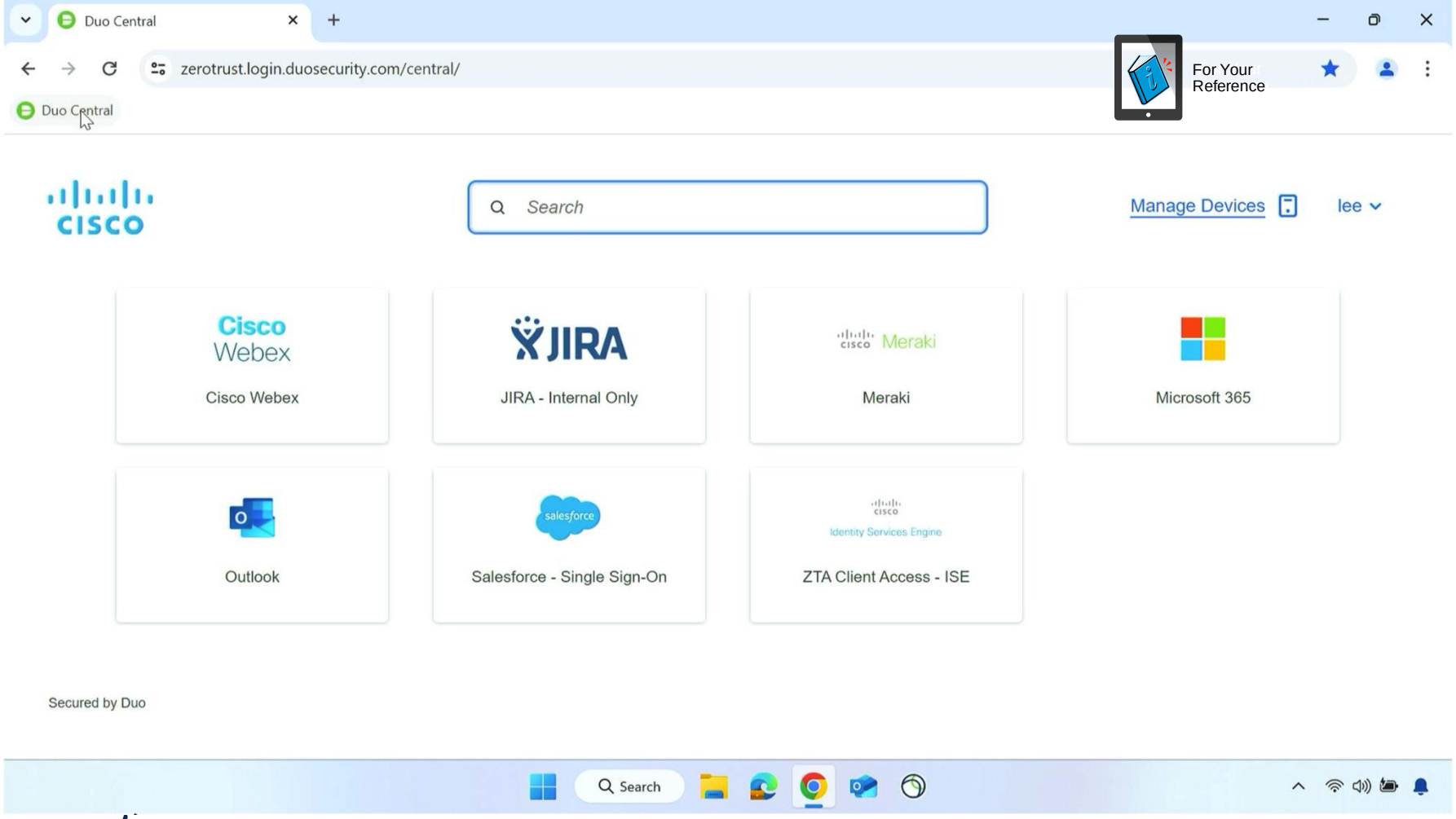
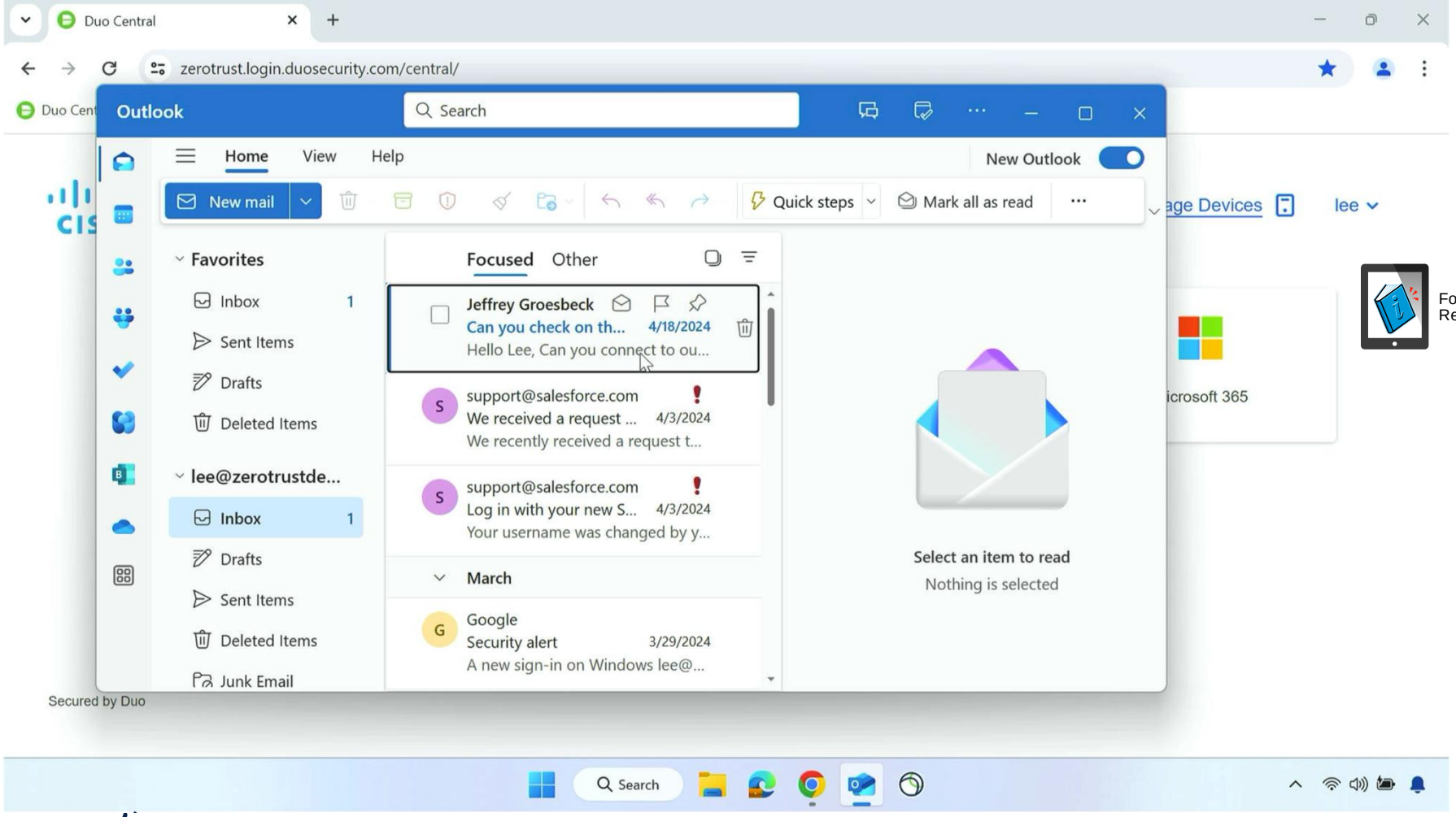


For Your Reference





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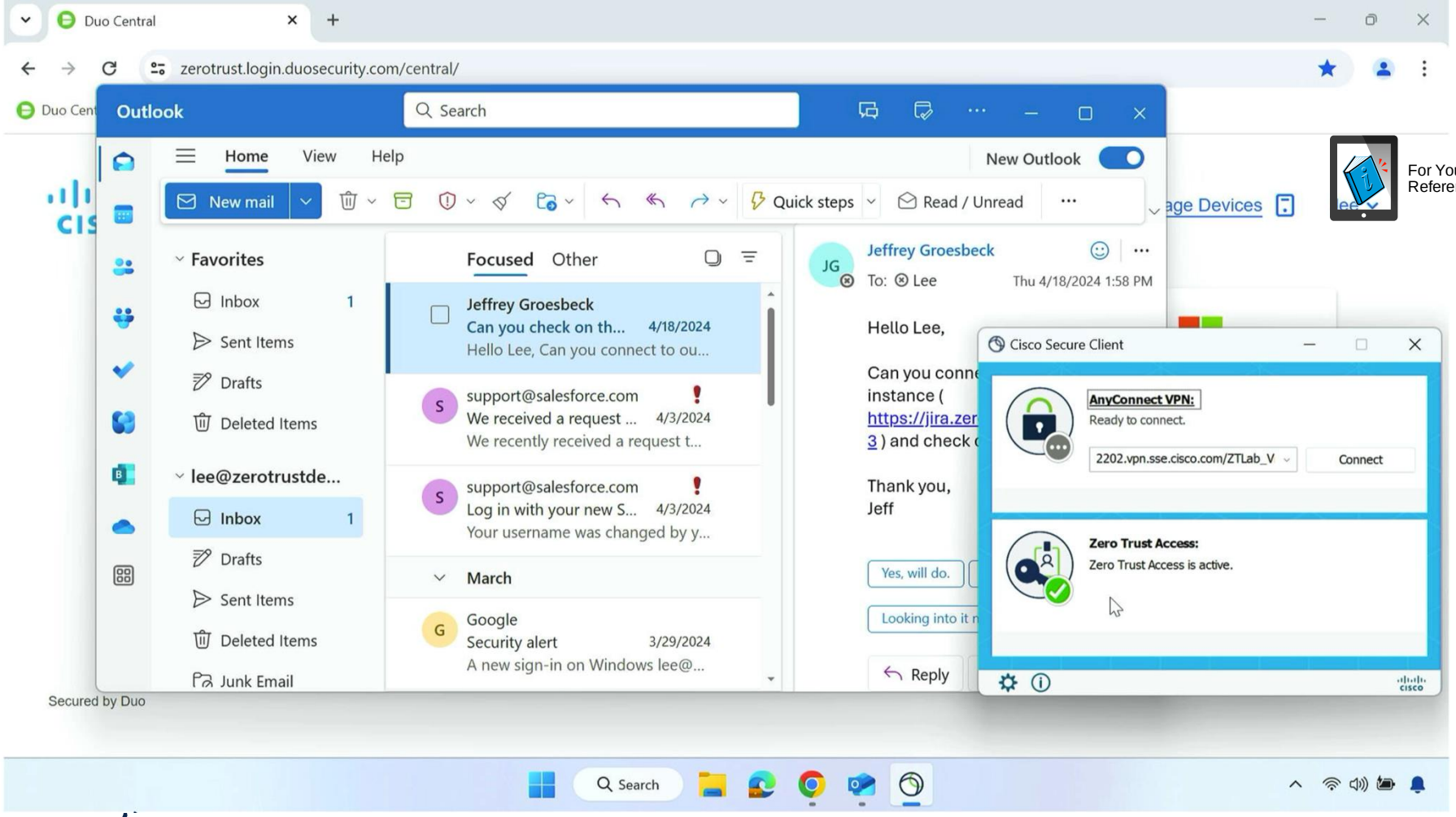

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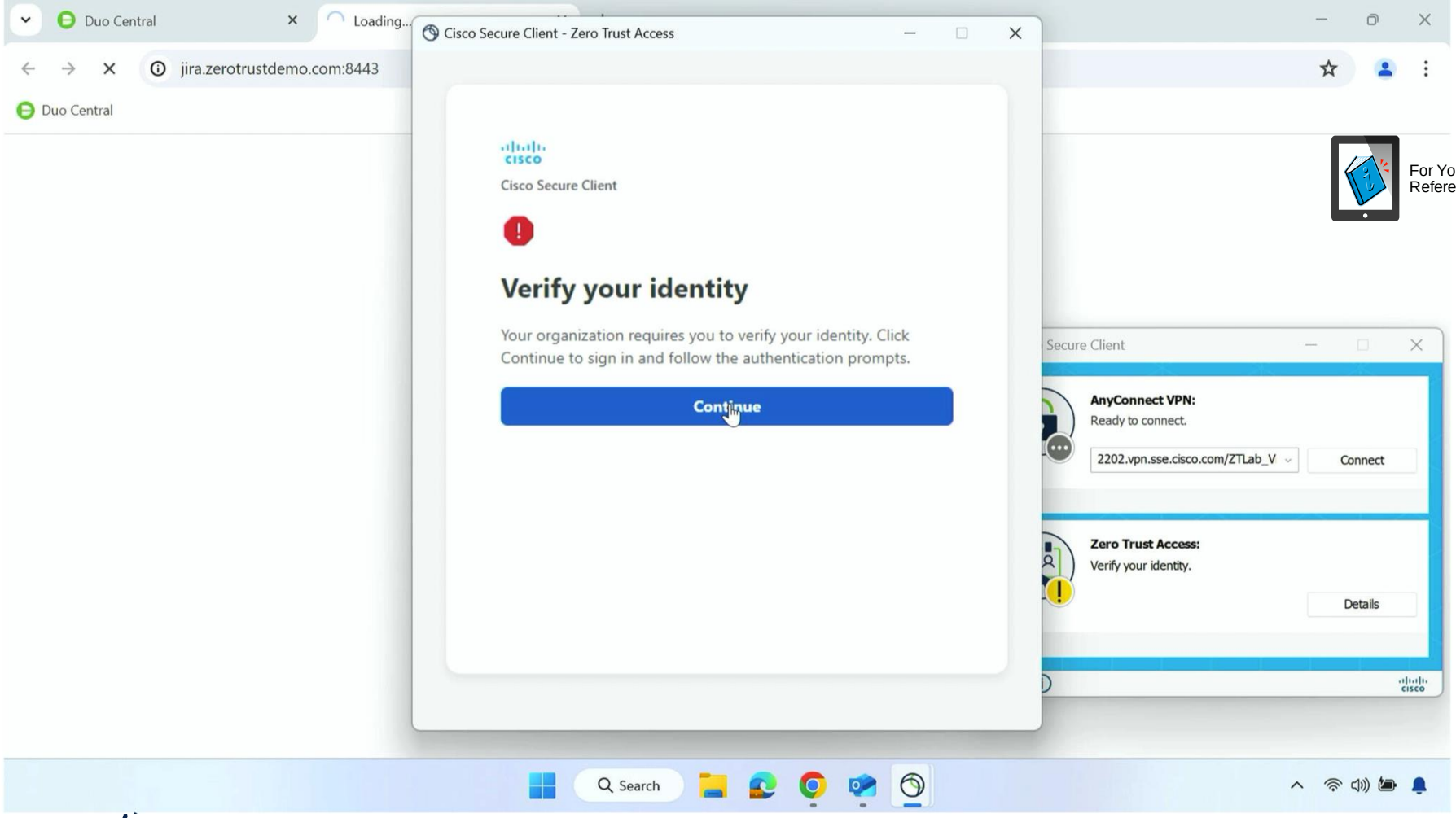

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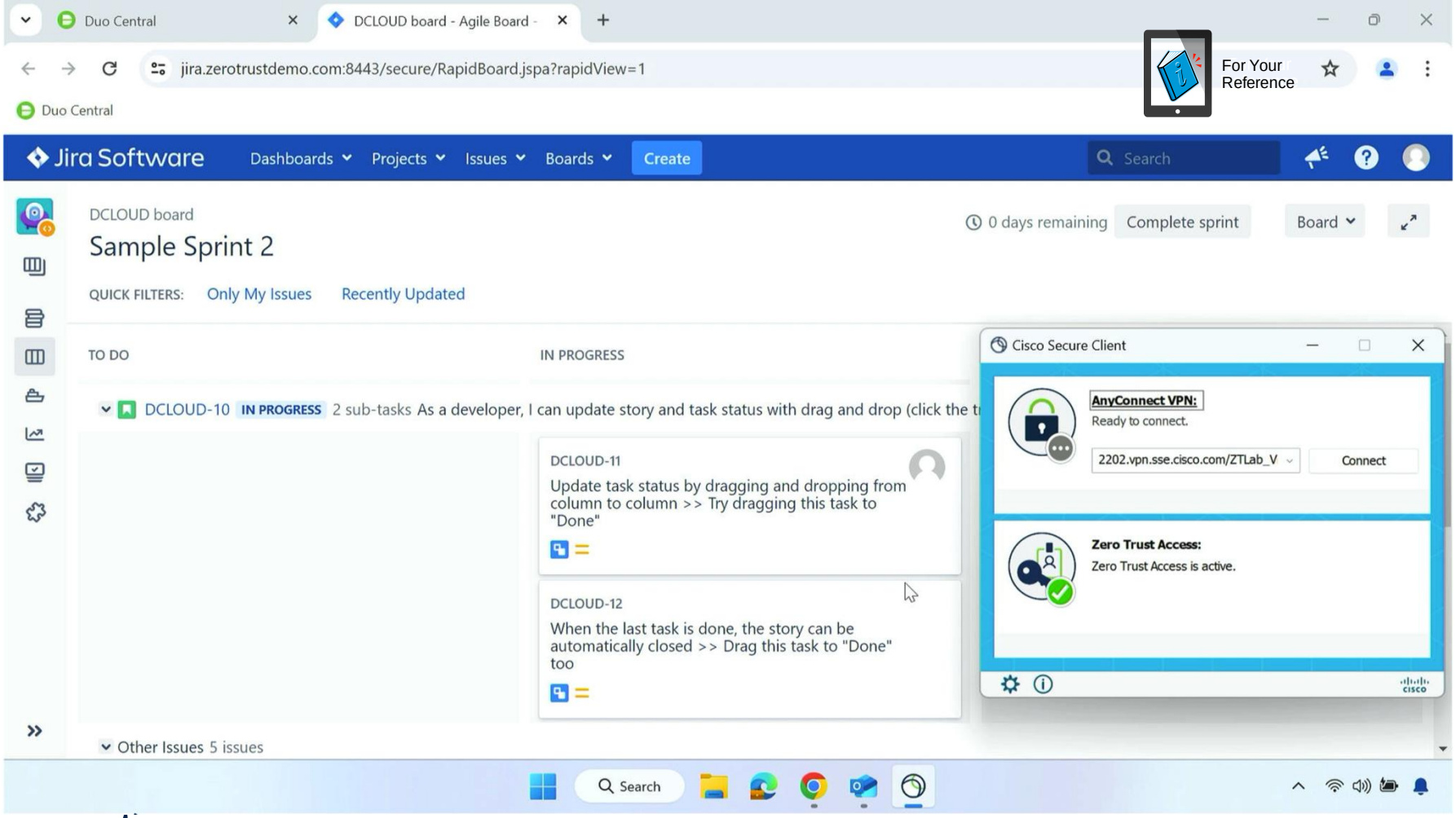
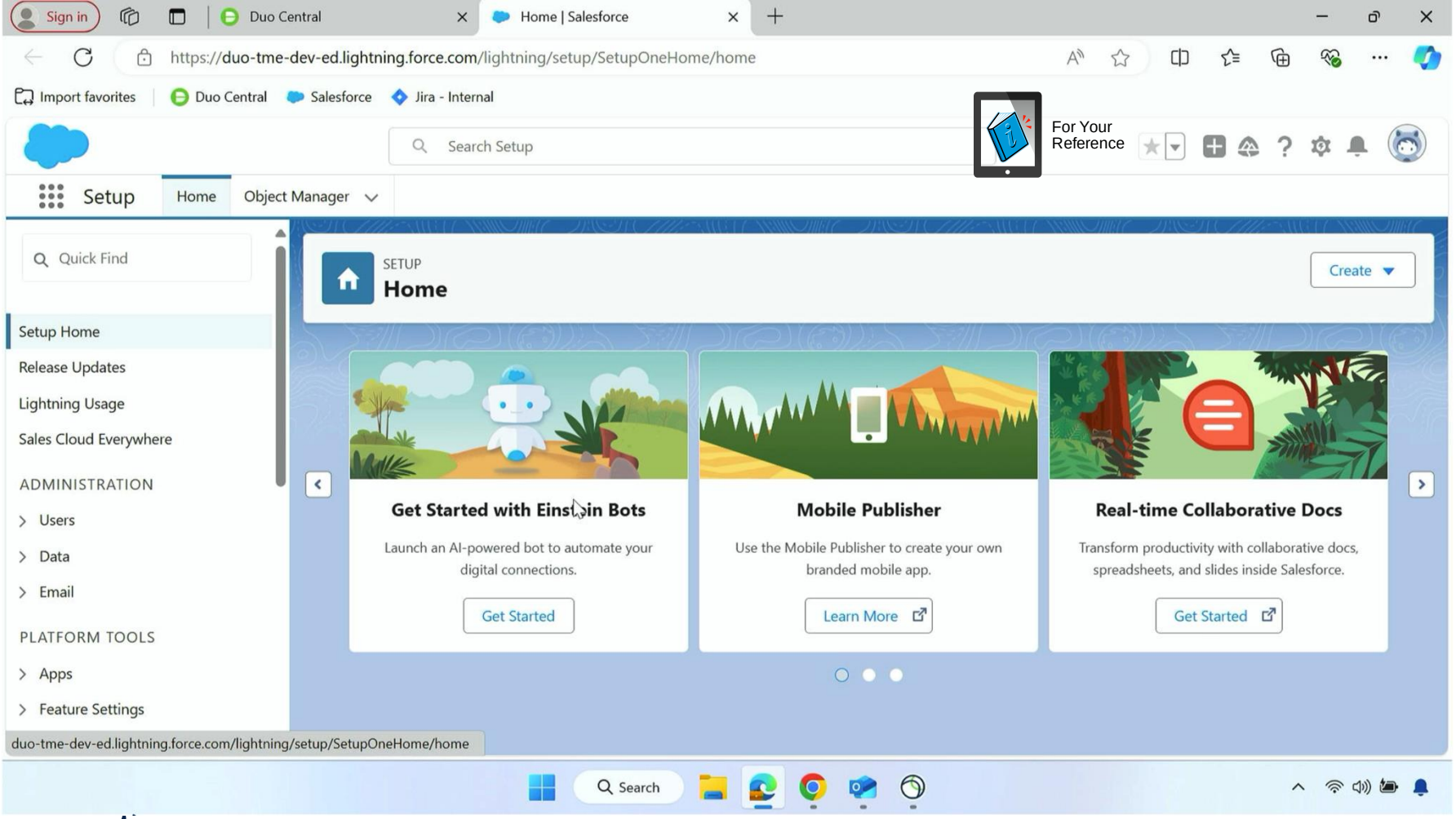




For Your Reference

Dashboard - Duo Security - Du

admin-1a4ab80e.duosecurity.com

Duo Central

8:42:56 PM AUG 6, 2024	Granted Remembered device via Passport	lee	Duo Central	No detections	Windows 11, version 23H2 (22631.3958) As reported by Duo Desktop	Remembered Device Location Unknown
8:41:46 PM AUG 6, 2024	Granted Remembered device	lee	JIRA - Internal Only	No detections	Windows 11, version 23H2 (22631.3958) As reported by Duo Desktop	Remembered Device Location Unknown
8:40:58 PM AUG 6, 2024	Granted Remembered device via Passport	lee	Secure Access Users	No detections	Windows 11, version 23H2 (22631.3958) As reported by Duo Desktop	Remembered Device Location Unknown
8:40:32 PM AUG 6, 2024	Granted Remembered device via Passport	lee	Microsoft 365 - zerotrustdemo.com	No detections	Windows 11, version 23H2 (22631.3958) As reported by Duo Desktop	Remembered Device Location Unknown
8:40:13 PM AUG 6, 2024	Granted Remembered device via Passport	lee	Duo Central	No detections	Windows 11, version 23H2 (22631.3958)	Remembered Device Location

Search

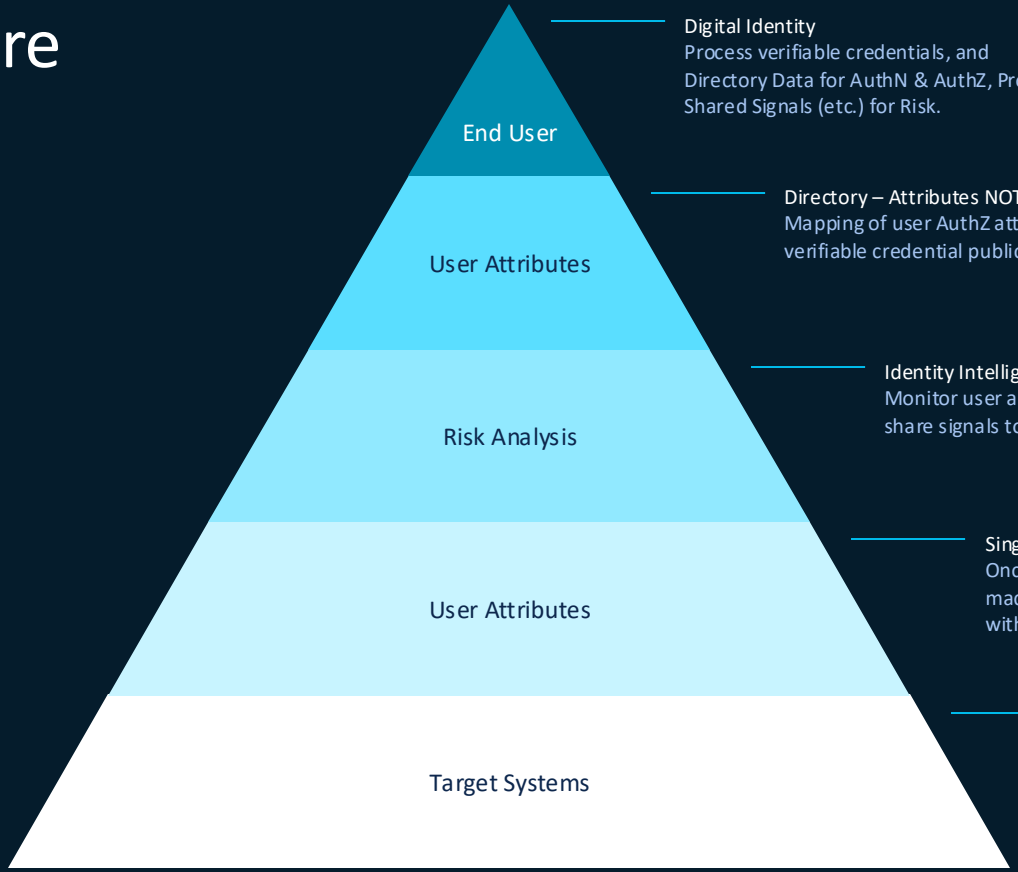
Identity Governance and Administration (IGA)

- IGA is the central point where entitlements (who can access what) are managed
- Managing entitlements has both security and compliance impact

Cookie-less SSO

- Session Hijacking is a real attack vector
  - Bad guy sits between user & SP (the app)
  - App sends user the cookie
  - Bad guy copies those cookies & now uses the cookie to access the app “as the user”
- Removing cookies from the process, session hijacking becomes thing of the past
  - Duo will have cookie-less SSO w/ Duo Passport

The Future



Digital Identity
Process verifiable credentials, and Directory Data for AuthN & AuthZ, Process Shared Signals (etc.) for Risk.

Directory – Attributes NOT Credentials
Mapping of user AuthZ attributes to their verifiable credential public keys.

Identity Intelligence, CAEP, Shared Signals
Monitor user and device behaviour and other share signals to determine access risk

Single Sign-On
Once a determination to grant access has been made, use SSO, where possible, to facilitate login without further user interaction

Secure Access
Based on policy and higher level factors above, facilitate seamless access to on-prem and cloud resources.

Agenda

- Introduction
- History & AAA
- Enter: Single Sign On
- SAML
- OAuth & OIDC
- WebAuthN & Passkeys
- Gotcha’s
- ID Needs Shades in Future
- Conclusion

Conclusions

Conclusions

- AAA is a basic security principle that is just as relevant today as it was 20 years ago.
- SAML & OIDC are for Single Sign On, while OAuth is for Application Authorization
- WebAuthN is more than just webauth in networking
- Passkeys are here, Passwordless is here – use them, but keep an eye to the future w/ Verifiable Credentials
- Duo makes Identity Easy and Secure
- You had fun in this session, even though the topic is boring

Good Links

- Shibboleth Consortium: https://www.shibboleth.net/index/
- OASIS: https://www.oasis-open.org
- Beer Drinkers Guide to SAML: https://duo.com/blog/the-beer-drinkers-guide-to-saml
- Fighting Cookie Theft: https://blog.chromium.org/2024/04/fighting-cookie-theft-using-device.html
- A demo of Webauthn and Passkeys: https://webauthn.io

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Other Sessions

- Here at Cisco Live
  - Identity Intelligence Demystified [BRKSEC-2162]
    Aaron Woland, Tuesday 14:00 (2pm)
  - Taking Authentication to the Next Level w/ Duo Security [BRKSEC-2584]
    Stefan Duernberger, Thursday 08:30
- On Demand Sessions
  - Demystifying the World of Passkeys [BRKSEC-2202] (Clayton Ballreich)


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Thank you
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