RSA: From History to Hands-On

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Agenda

- Brief History about RSA
- Multifactor Authentication (MFA) Fundamentals
- RSA Overview & Products
- Career Opportunities: What's in it for You?
- Project Overview: Milestones & Flow
- Technical Project Deep Dive: Scenario & Architecture
  - Identity Router (IDR)
  - Identity Source (IS)
  - My Page
  - RSA MFA Agent for Microsoft Windows
  - RADIUS
  - Security Assertion Markup Language (SAML)

Every digital handshake, every secure online transaction, every protected piece of data - RSA has been a silent guardian.

Brief History about RSA

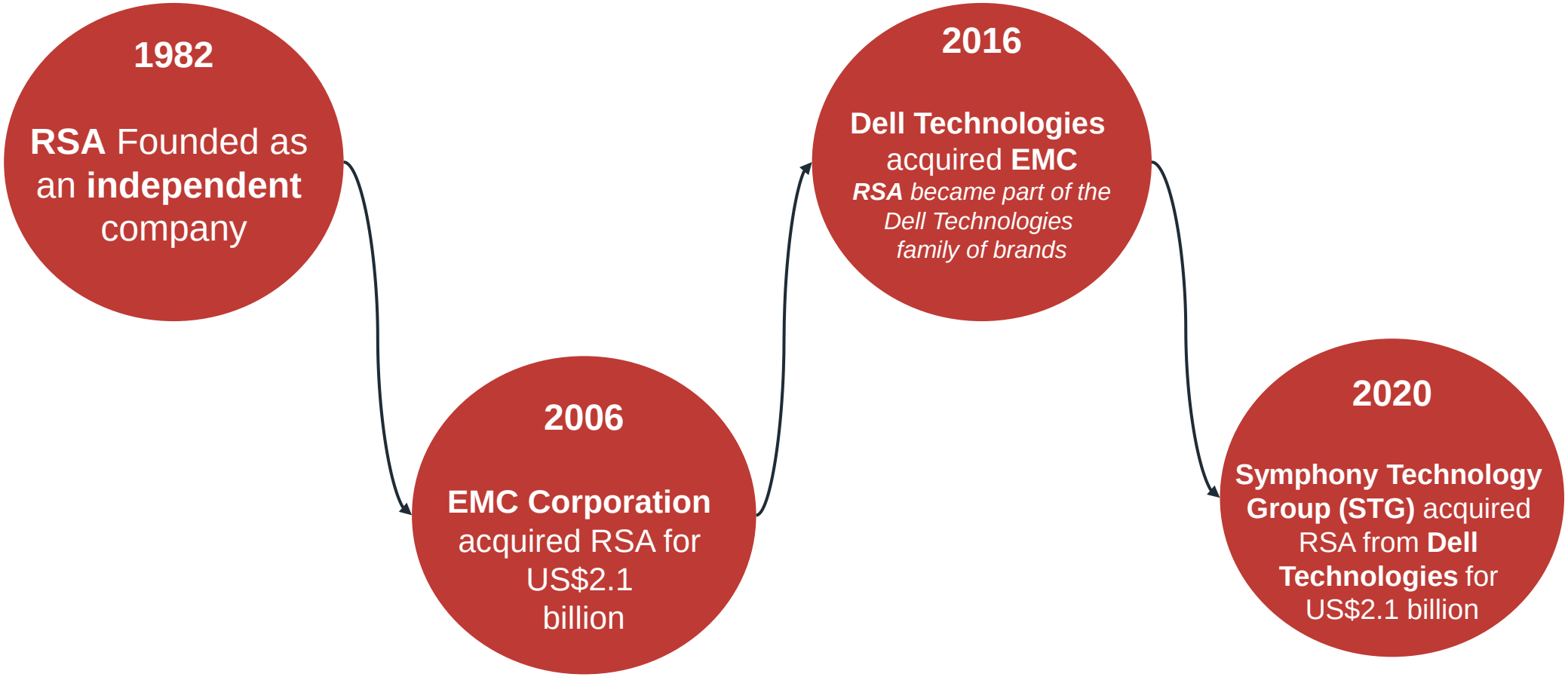
Brief History about RSA

- **RSA**, an **American computer and network security company** founded in **1982** by Ron **Rivest**, Adi **Shamir**, and Leonard **Adleman**, named after their initials emerged from their pioneering work on **asymmetric cryptography.**

- It is headquartered in **Burlington**, **Massachusetts**. It maintains a global presence with regional and international offices across the **Americas**, **Europe**, **Asia**, **Africa**, and **Australia**.

Brief History about RSA

- RSA's Acquisition History



Multifactor Authentication (MFA) Fundamentals

Multifactor Authentication (MFA) Fundamentals

IAAA

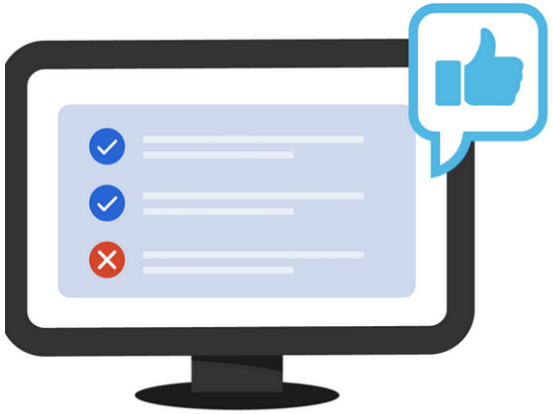
Identification

Process where the user claim's identity to a system

Authentication

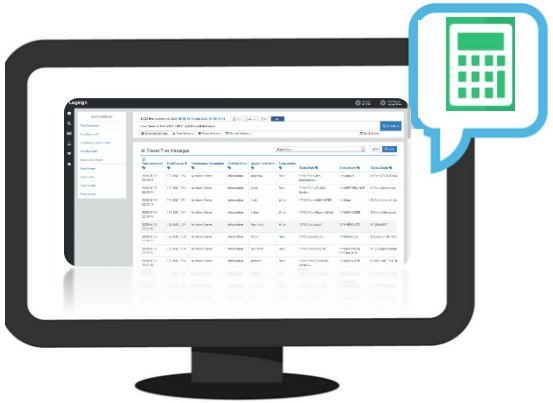
Verifying identity of user to a system

Authorization



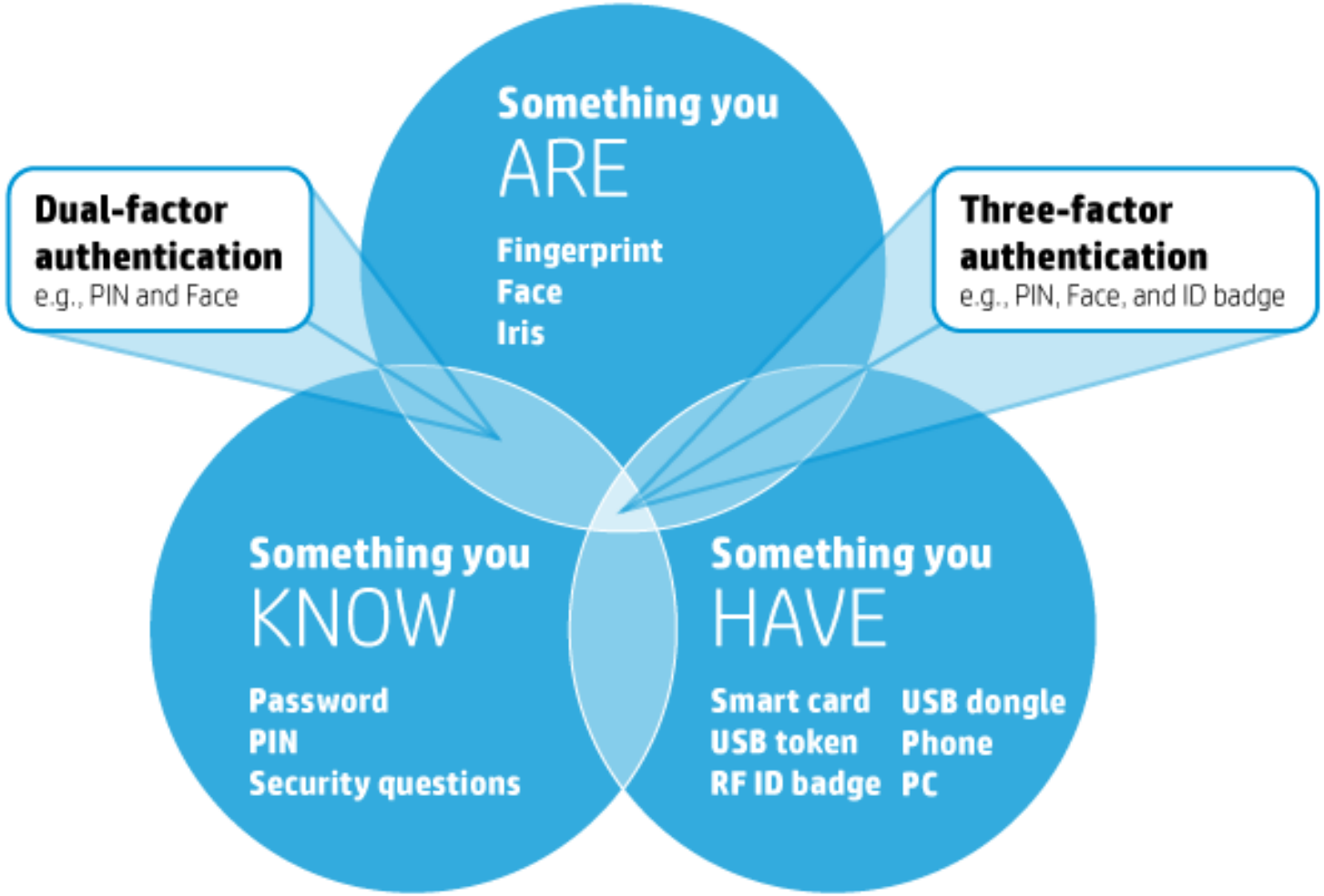
Giving users permission to access a resource

Accounting



What resources and pages are being accessed? [Logging]

Multifactor Authentication (MFA) Fundamentals



RSA Overview & Products

RSA Overview & Products

- Industries We Secure

Government

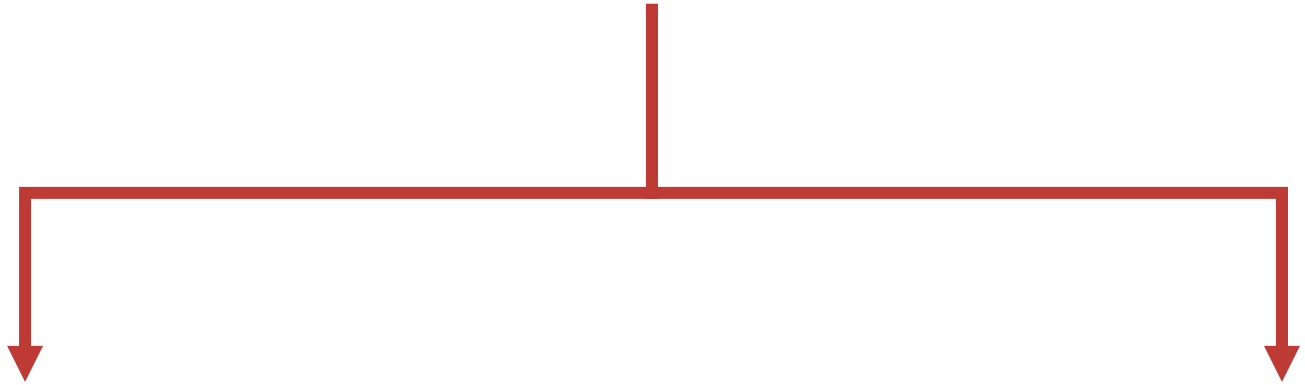
Energy

Financial

Healthcare

RSA Overview & Products

RSA focus on delivering the **AAA** framework. This is represented into **two products**



SecurID

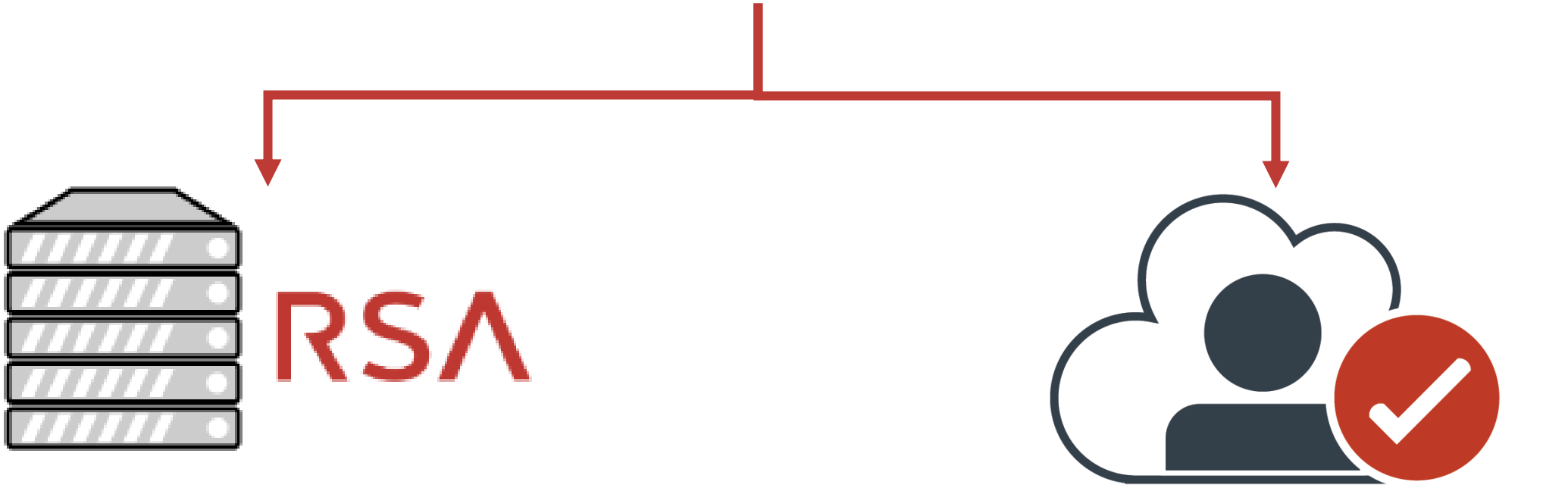
Responsible for: **Authentication**

Identity Governance and Life Cycle (IG&L)

Responsible for: **Authorization & Accounting**

RSA Products

- **RSA - SecurID** provides **On-premise solution** (Authentication Manager – AM) and **Cloud solution** (Cloud Authentication Service - CAS) that could be used separately or combined into one multifactor (MFA) Hybrid solution.

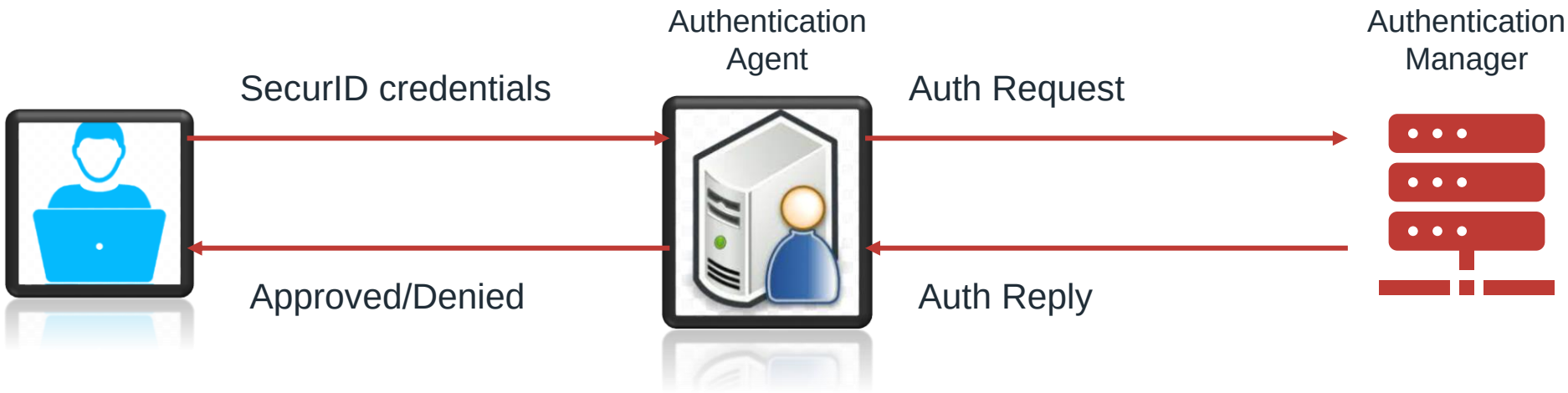


RSA Products: Authentication Agents

- Authentication Agent acts as a **gatekeeper, challenges users for their RSA credentials** then **passes them to Auth Manager**.

- Agents could be a **3rd party device**: Firewall, VPN gateway, router,switch..etc.

Or could be a software application provided by RSA to protect Windows/Linux machines…etc.



RSA Products: Authenticators

- RSA authenticators, also known as **tokens**, **generate one-time authentication credentials** for a user.
- Users should have **hardware** or **software token** to be able to authentication with AM or CAS.

Hardware SID700

Hardware SID800

iShield

RSA Authenticator App for Windows, iOS and Android phones

DS100

Career Opportunities: What's in it for You?

What is in it for you?

01

Perfect simulation

Fully responsible for implementing and troubleshooting their environment, simulating real-world corporate scenarios

02

Practical Experience

Students gain real-world experience with industry-standard technologies, enhancing their skills and employability.

03

Career Opportunities

Improved job prospects as students become proficient in RSA tools, making them attractive to potential employers and increasing their chances of being shortlisted for RSA vacancies.

Project Overview: Milestones & Flow

Background

1

Identity

- Install AD and IDR.
- Create Identity Source
- Create Access Policy.
- Protect MyPage with Authenticate OTP.
- MyPage Customization.

2

Protect Access

- Install Windows machine and MFA agent.
- Apply GPOs to challenge a certain group.
- Install ntradping (RADIUS Client)
- Challenge users with Approve and device biometrics

3

Protect Access

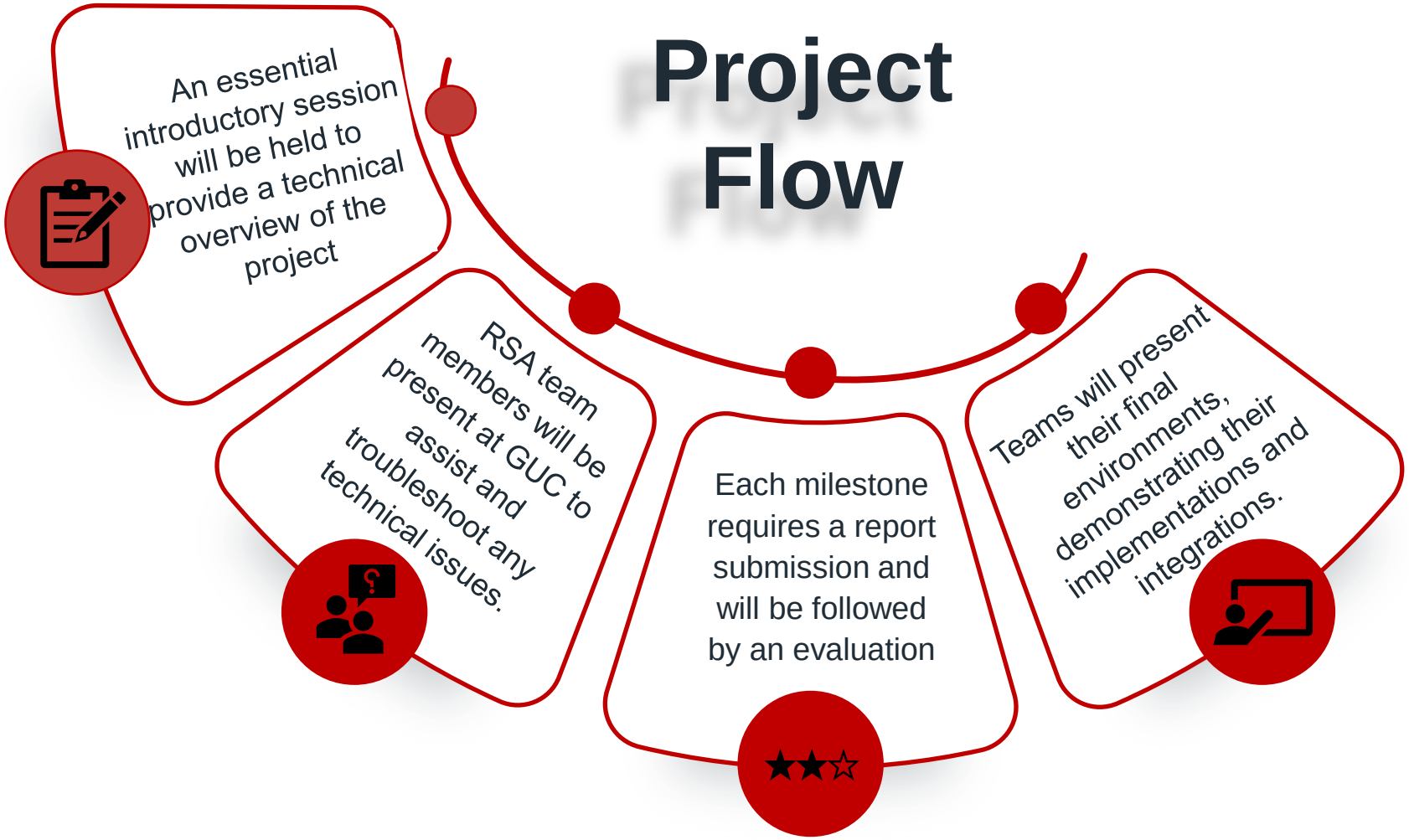
- Integrate the CAS with SAML apps such as Salesforce and sptest.iamshowcase.com

4

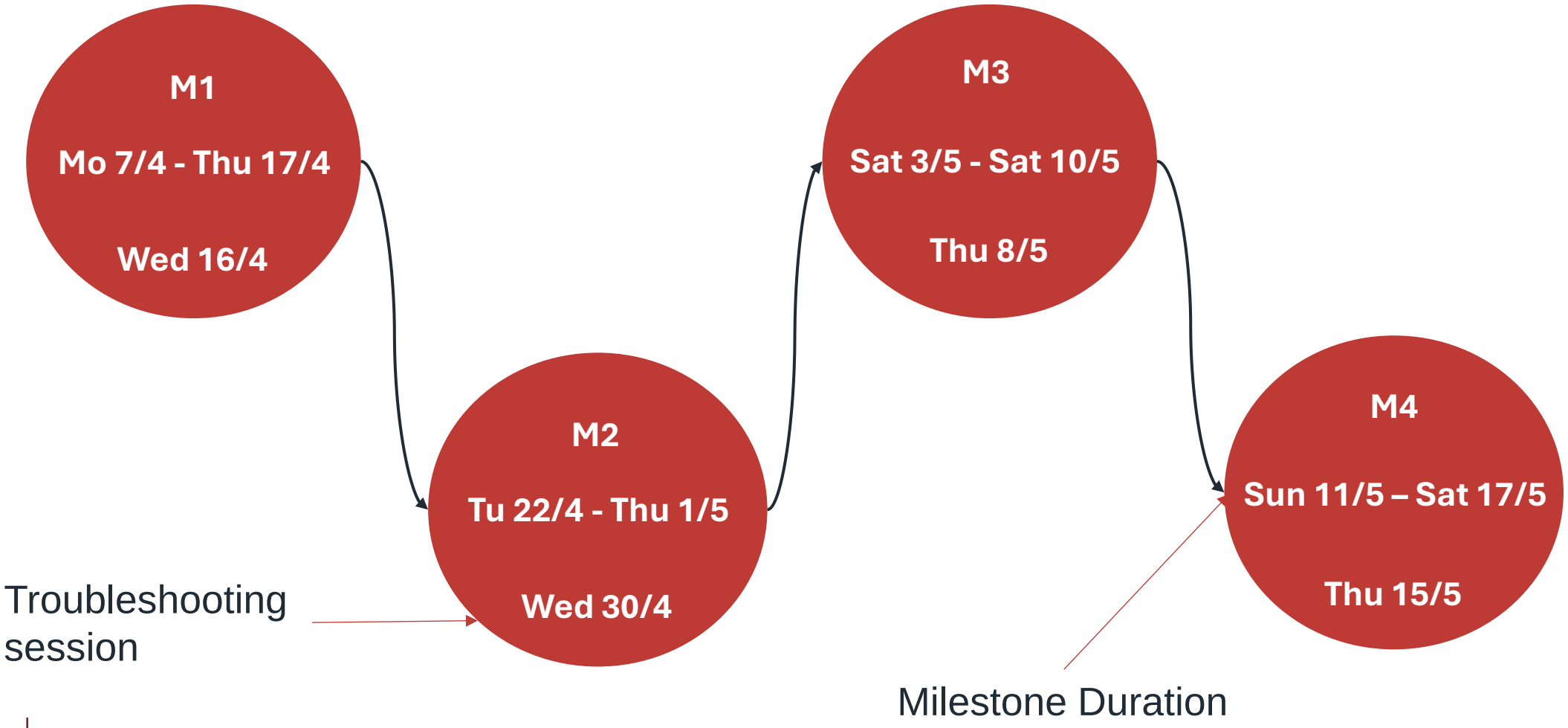
Stress Testing

- Students will use JMeter to do a performance test to see how the Cloud console handles REST API calls and how the IDR manages RADIUS requests, providing a comprehensive performance dashboard for multiple use cases

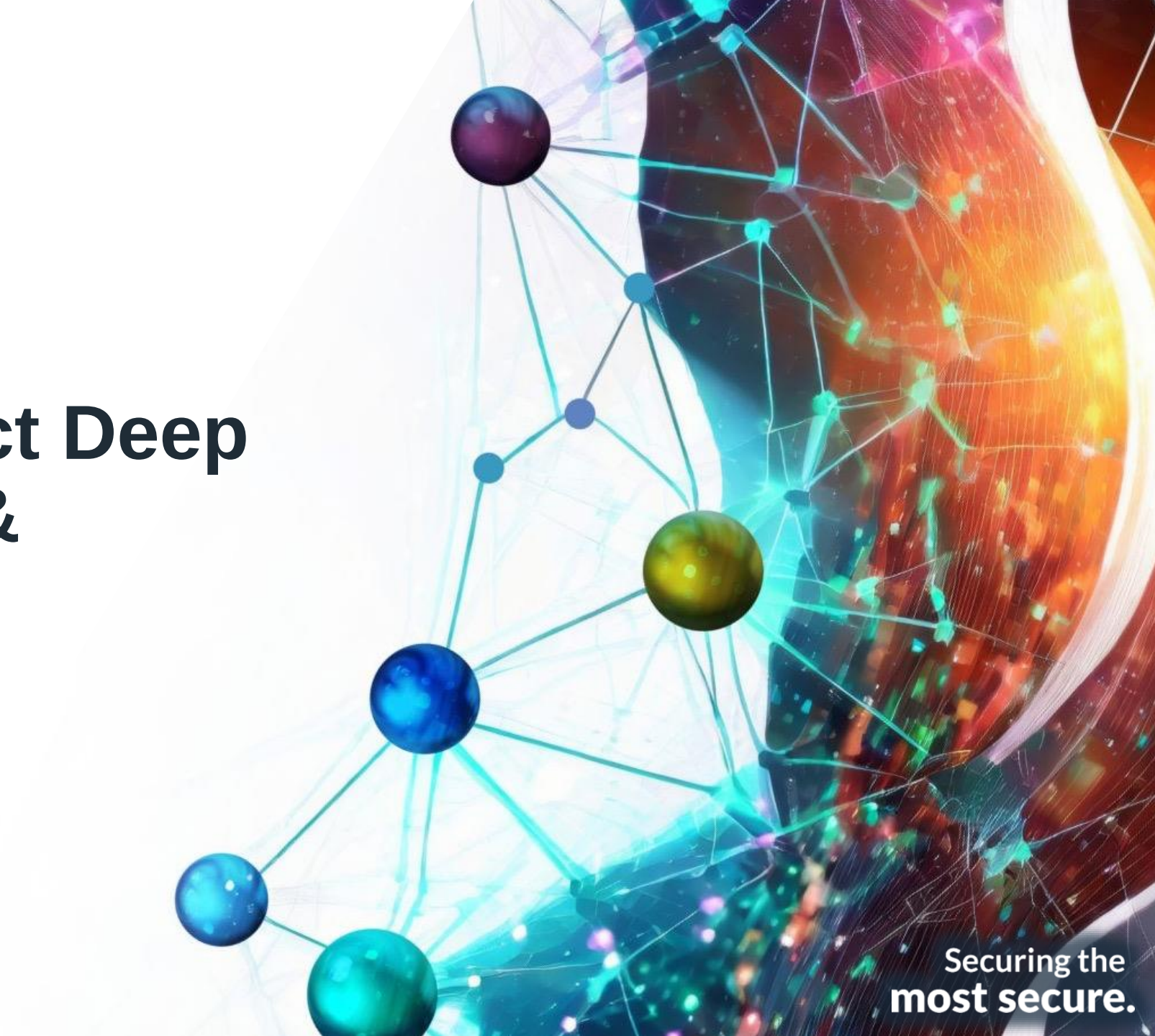
Project Flow



Milestones and troubleshooting sessions Timeline



Technical Project Deep Dive: Scenario & Architecture



Identity Router

Explanation

Identity Router

IDR is software that enforces authentication and access for protected resources.

- **Communication:**
  - Connects with Cloud Authentication Service, Identity Sources, and Authentication Manager.
- **Key Benefits:**
  - Enterprise Connector: Bridges LDAP and Authentication Manager to the cloud.
  - RADIUS Support: Built-in RADIUS server for authentication.
  - Single Sign-On (SSO): Enables SSO via the IDR portal.
- **Interfaces:**
  - Single Interface: Used for both management and portal
  - Dual Interface: Separate interfaces for management and portal
- **Deployment Options:**
  - Can be deployed on VM, Hyper-V, AWS, or Auth Manager 8.5+ (Embedded IDR).

Identity Router

Enable SecurID Token Users to Access Resources Protected by the Cloud Authentication Service

User opens application portal and provides primary and/or additional credentials if required by access policy.

1. Identity router sends user credentials to identity source for verification.

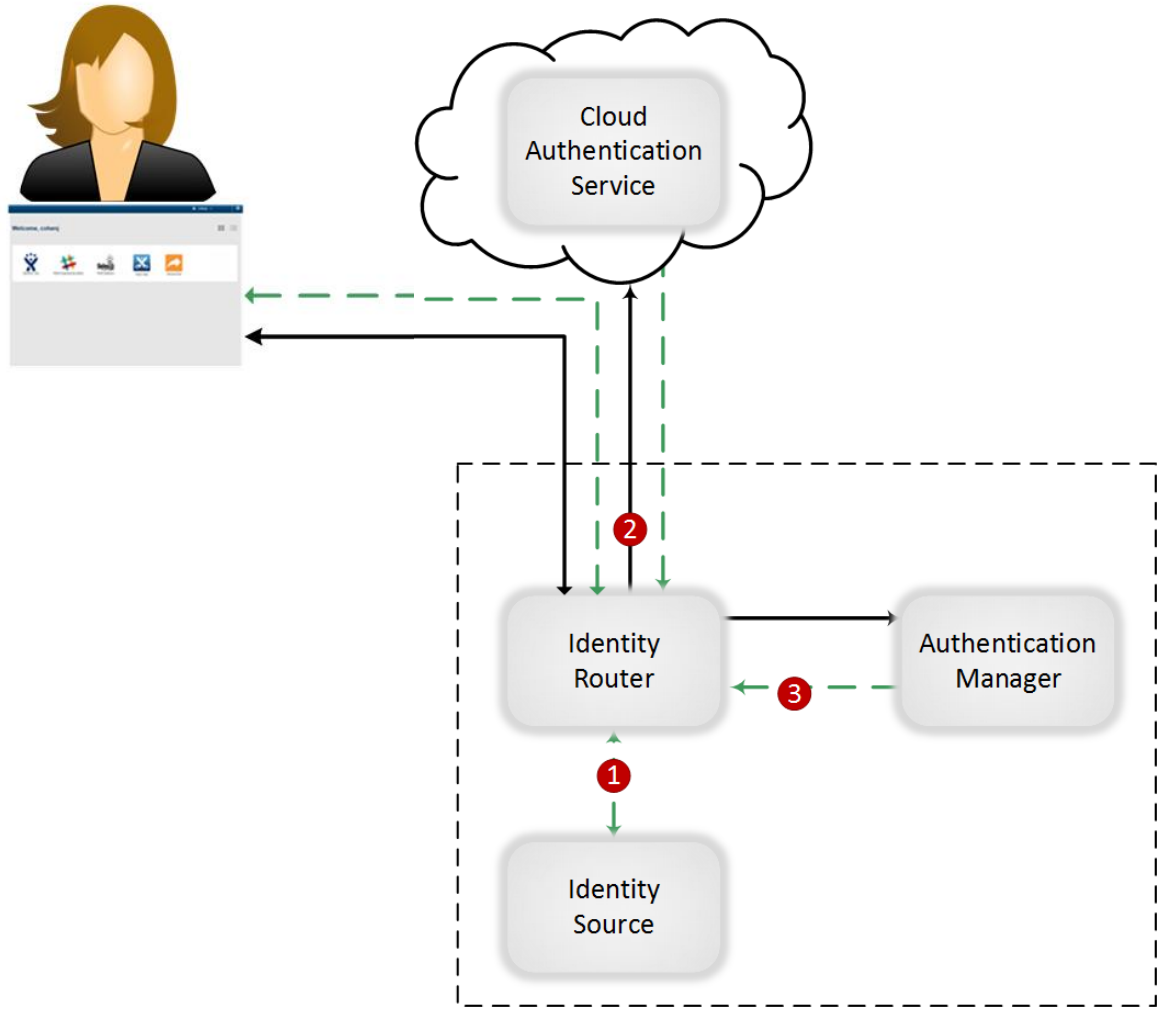
User is now signed in to the portal. User clicks an app icon to open an app.

2. Identity router asks the Cloud Authentication Service to check access policy for this app. In this case, a SecurID Token is required.

User provides SecurID Tokencode based on policy requirment.

3. Identity router sends SecurID Tokencode to Authentication Manager for validation. Authentication Manager returns approval.

User is granted access to the app.



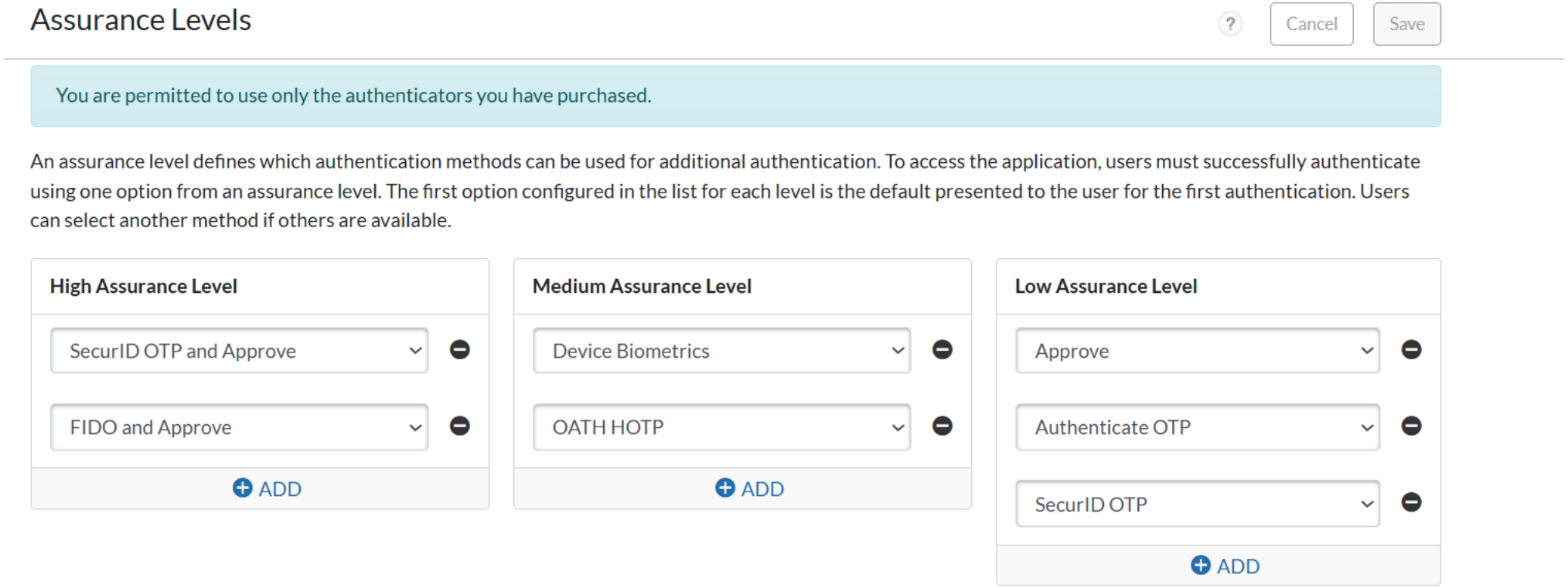
Identity Sources

An identity source is a repository in the Cloud Authentication Service (CAS) that represents one primary LDAP directory server, its replicas, and/or a Unified Directory. Cloud Authentication Service includes the following types of identity sources:

- Azure Active Directory (SCIM)
- Microsoft Active Directory
- Local
- SCIM Managed
- RSA Authentication Manager Internal Database

Assurance Level

- Assurance levels define the authentication methods required to access applications or authentication clients (relying party or RADIUS client) during authentication. RSA provides three assurance levels: High, Medium, and Low. Each level indicates the relative strength and security of the authentication methods within that level



Access Policies

- Access policies determine which users can complete authenticator registration and access applications or authentication clients. Policies also determine whether those users must perform additional authentication, after primary authentication, in order to use the resources.

RSA evaluates an access policy by performing the following high-level steps.

1. RSA identifies the target user population for the policy using the **Identity Source** field on the Identity Source
2. RSA goes to the first rule set and uses the **Target Population** field to determine if the rule set applies to all users or only to users who match LDAP user attribute criteria.
3. RSA uses the **Access** field to determine if user access is allowed or denied or determined based on contextual conditions.
4. RSA uses the **Additional Authentication** field to determine if additional (step-up) authentication is required.
5. If multiple rule sets are used, RSA continues to process each one in sequence.

My Page

Cloud-hosted SSO that empowers users to do more

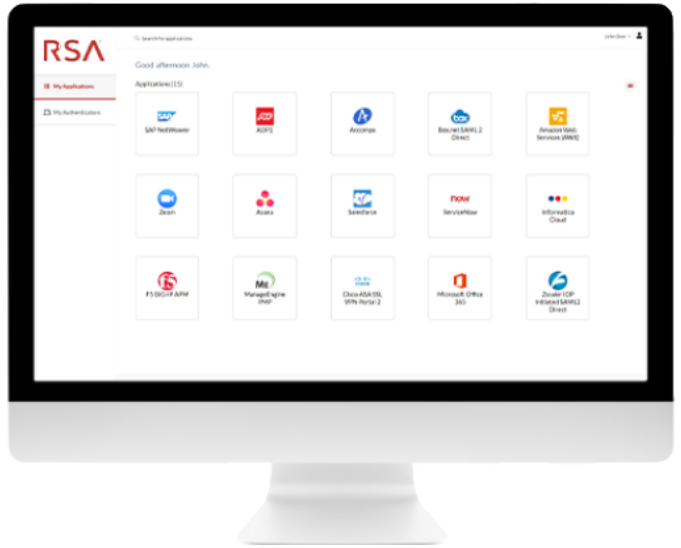
My Page

- My Page enhances Single Sign-On (SSO) by providing a centralized portal for quick access to multiple applications. It offers self-service functionality, credential management, and a customized user experience. As a cloud-hosted SSO solution, it simplifies access for users while reducing IT workload by enabling self-service device registration and management.

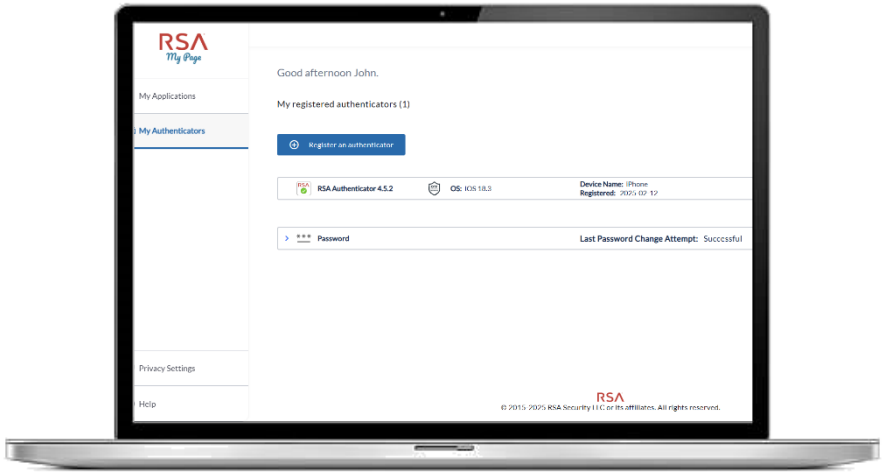
- **Features & Benefits of My Page (SSO Solution)**
  - Unified Portal: Centralized access for SSO and credential management.
  - Self-Service Registration: Enables users to register any cloud authenticator.
  - Reduced Helpdesk Load: Minimizes IT support requests through self-service.
  - Cloud-Hosted: Enhances efficiency and reduces costs.
  - QR Code Enrollment: Simplifies the setup process.
  - Secure Access: Supports modern authentication methods.
  - Custom Branding: Allows organizations to personalize branding and domains.

My Page

- **My Applications**
  - The My Applications view enables users to securely and conveniently leverage SSO to access their applications.



- **My Authenticators**
  - In the My Authenticators view, users can register and manage authenticators, using intuitive QR codes for self-enrollment.



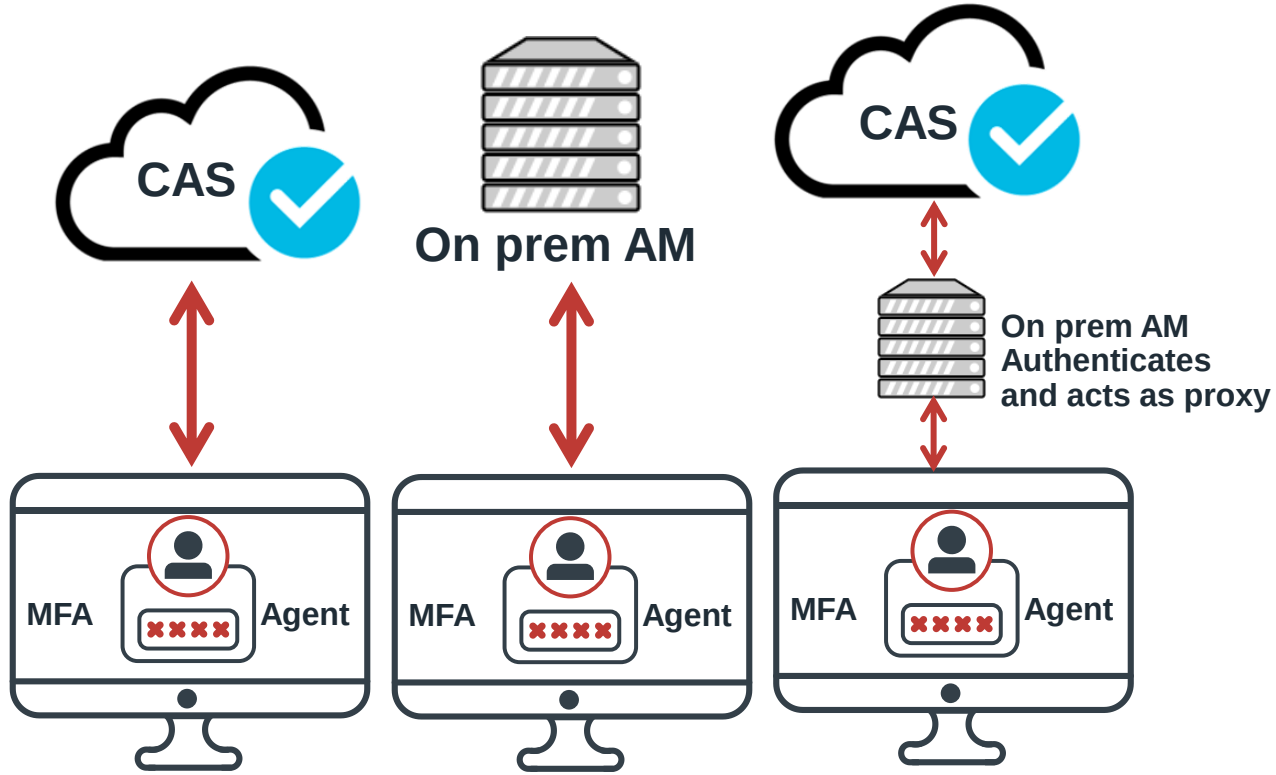
RSA MFA Agent for Microsoft Windows

Explanation and Implementation

Agent-Server Communication

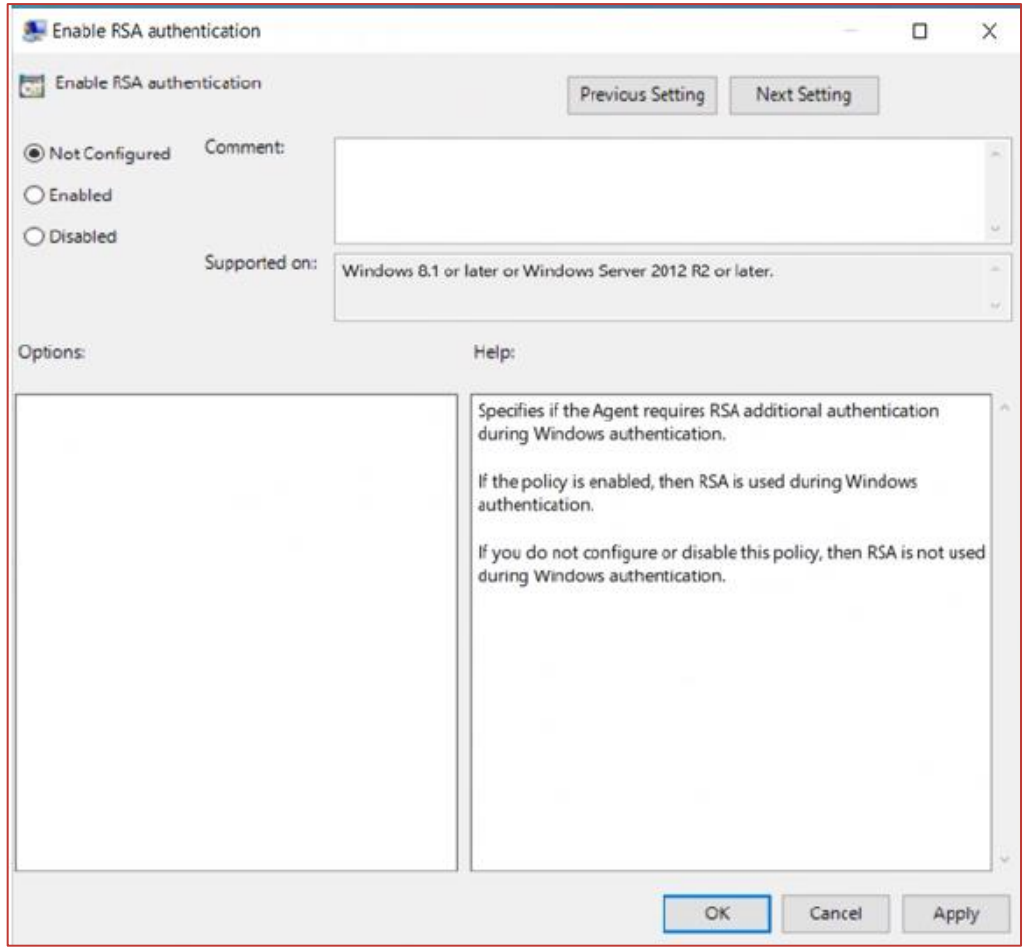
When users try to sign into or unlock their Windows computers, the MFA Agent communicates with either Cloud Authentication Service or Authentication Manager to manage authentication.

- **Protocol:**
  - AM => REST
  - CAS => REST
- **Communication Port:**
  - AM => TCP 5555
  - CAS => TCP 443
- **Components used for communication:**
  - AM- CAS
- **Test Authentication:** MFA Agent Test Authentication

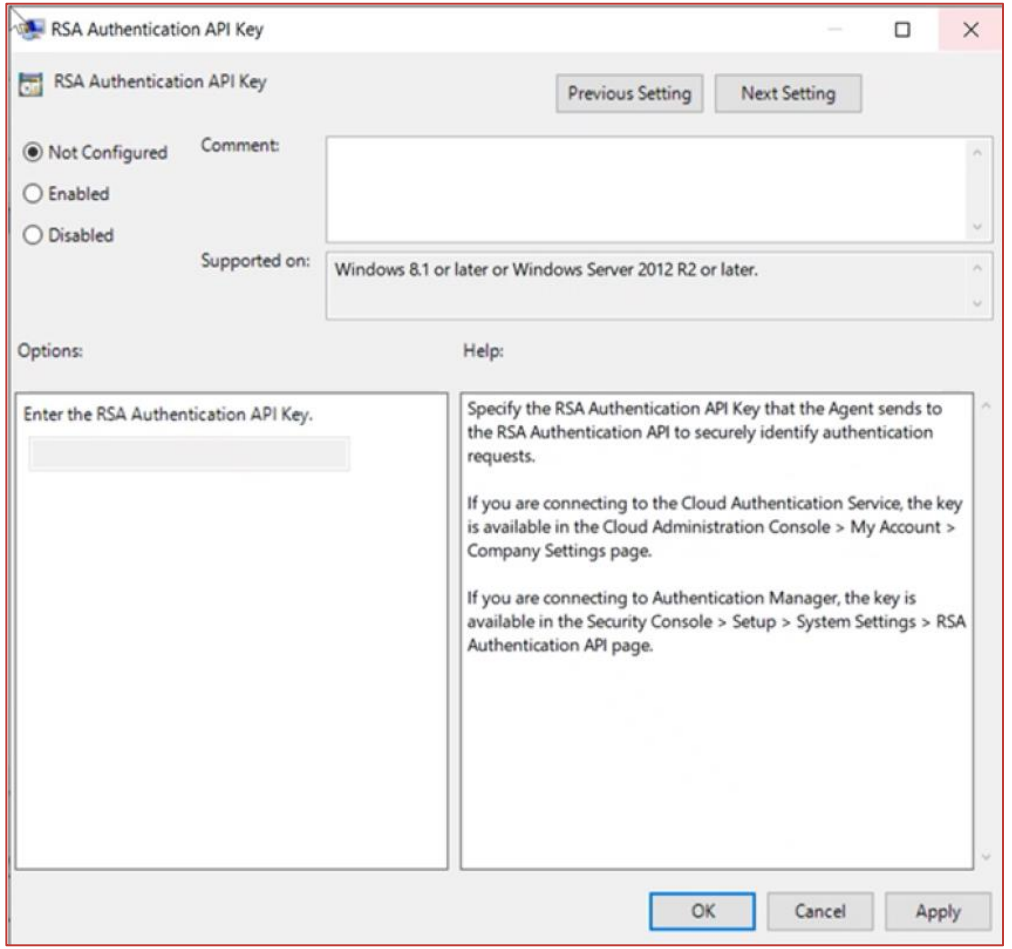


GPO Configurations for MFA Agent (CAS)

- Required policies to be enabled for the Agent to work:
  - Enable RSA Authentication

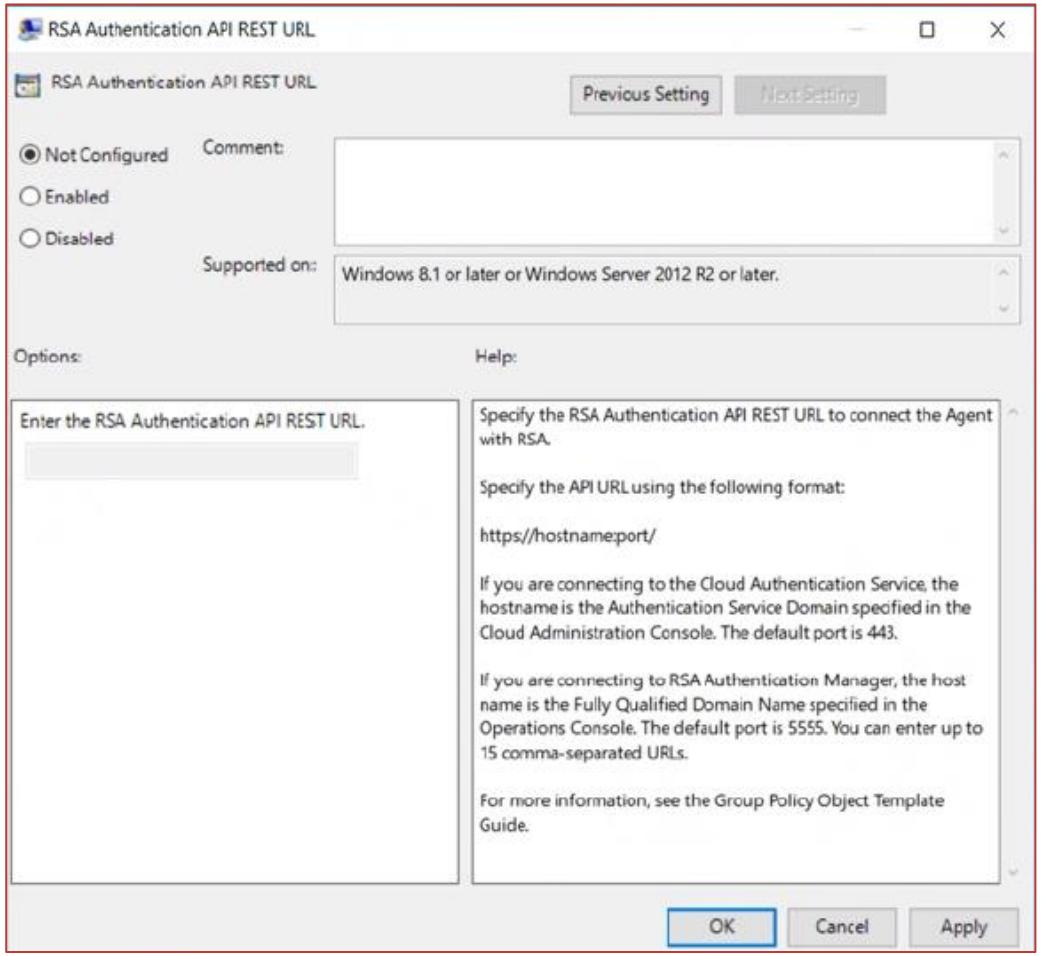


  - API KEY

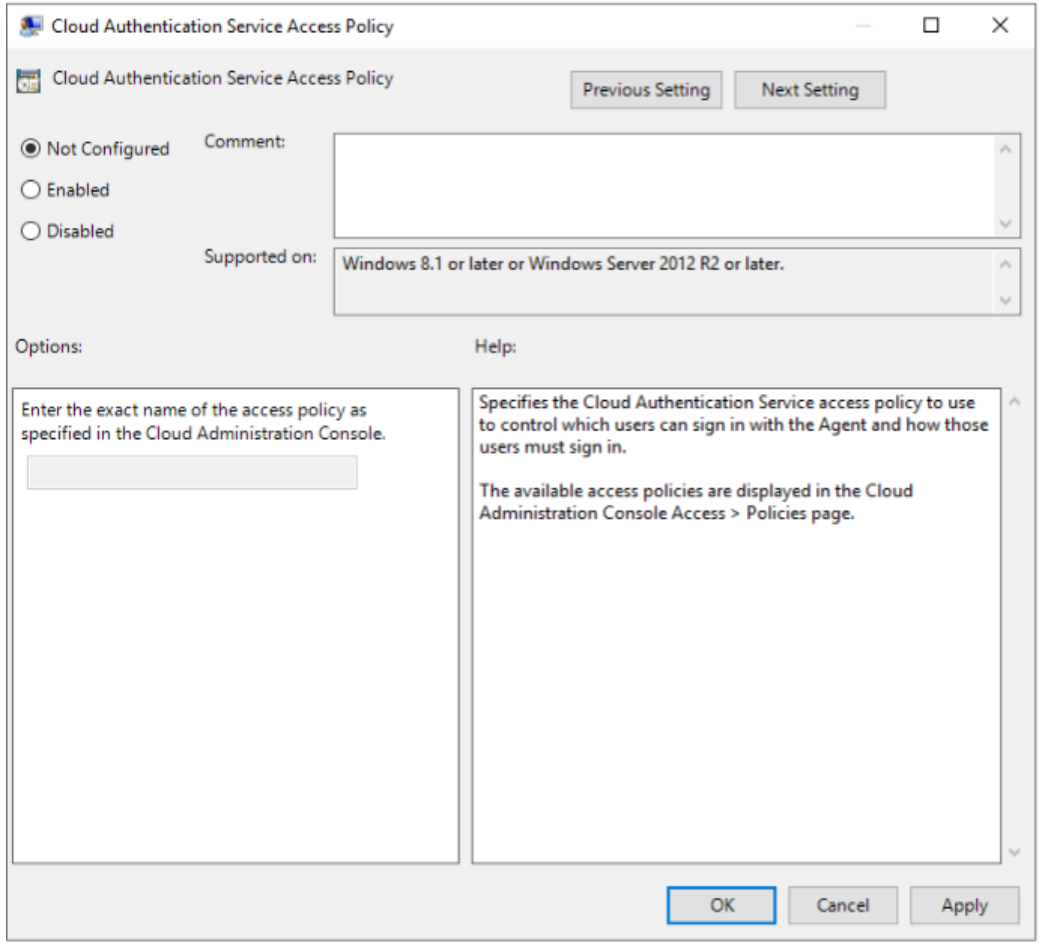


GPO Configurations for MFA Agent (CAS)

- Required policies to be enabled for the Agent to work:
  - API REST URL

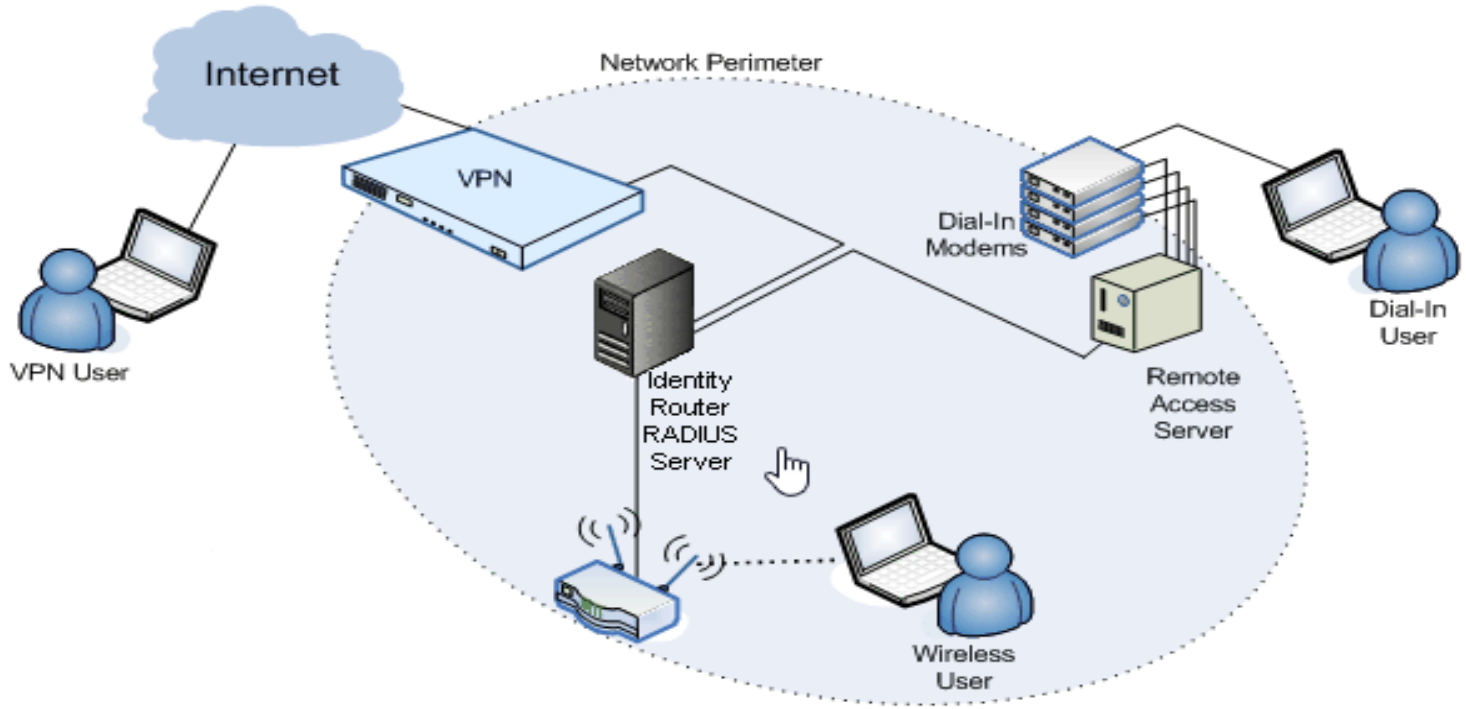


  - Cloud Authentication Service Access Policy Name



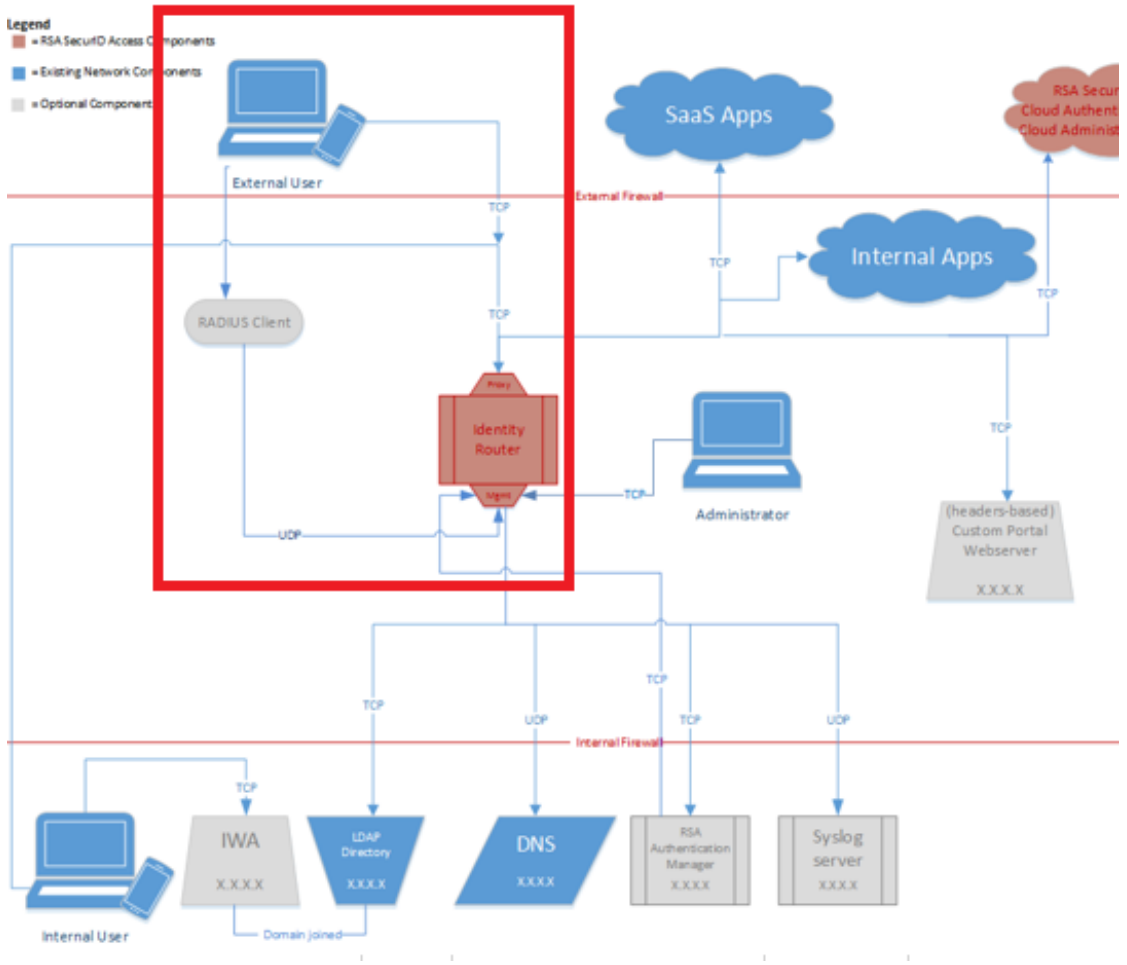
RADIUS

High-Level Authentication Flow for RADIUS for the Cloud Authentication Service



RADIUS

- Based on **FreeRADIUS server** IDR Management interface is the radius server
- Shared Secret is the main component
- Two main entities:
  1) Radius Server
  2) Radius Client



SAML

Security Assertion Markup Language

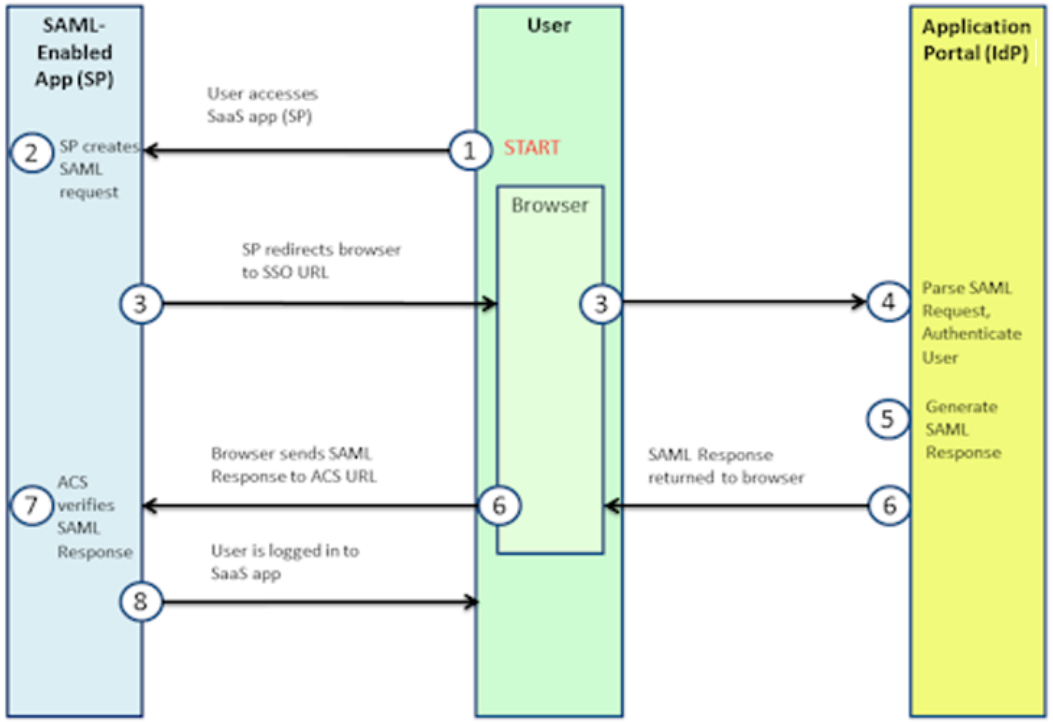
Introduction

- SAML stands for Security Assertion Markup Language
- Open standard for authentication and authorization between different entities with an established trust
- Typically, one entity is the Service Provider (SP) and the other is the Identity Provider (IdP)

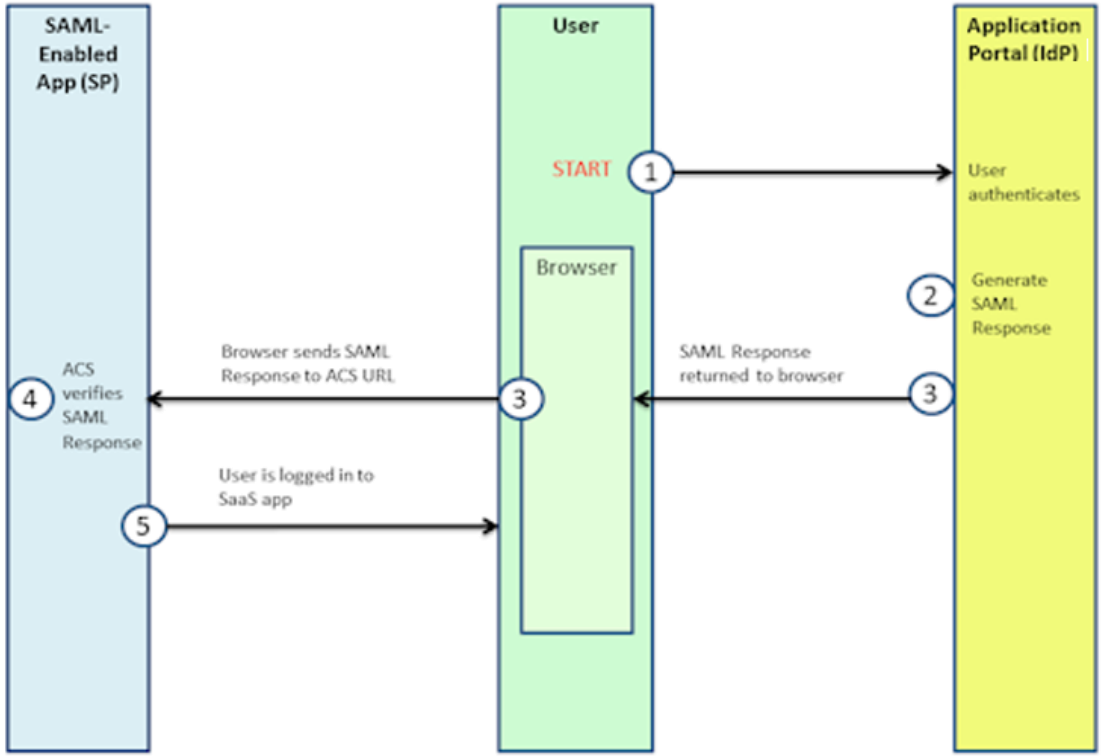
SAML

- Typically, one entity is the Service Provider (SP) and the other is the Identity Provider (IdP)

Communication Flow (SP-initiated and IdP-initiated)



SP-initiated/Relying Party



IdP-initiated

SAML

SP Parameters

SP Parameters – Entity ID

- Globally unique identifier used to identify the SP participating in the SAML authentication and authorization protocol
- Can be referred to as **Audience**, or **SP Identifier**
- Can be a URL or a string

SP Parameters – Assertion Consumer Service URL

- Critical component of a SAML workflow to determine the direction of flow from the IdP to the SP
- Parses the Assertion to determine user access (grant/revoke)
- Must be unique and accessible

SP Parameters – Connection URL

- Can be referred to SSO/Login URL
- For SP-initiated applications, this is the mandatory Endpoint that triggers the SAML request to the IdP
- For IdP-initiated applications, this is an optional Endpoint that acts as a Relay State to land the users on a specific SP page

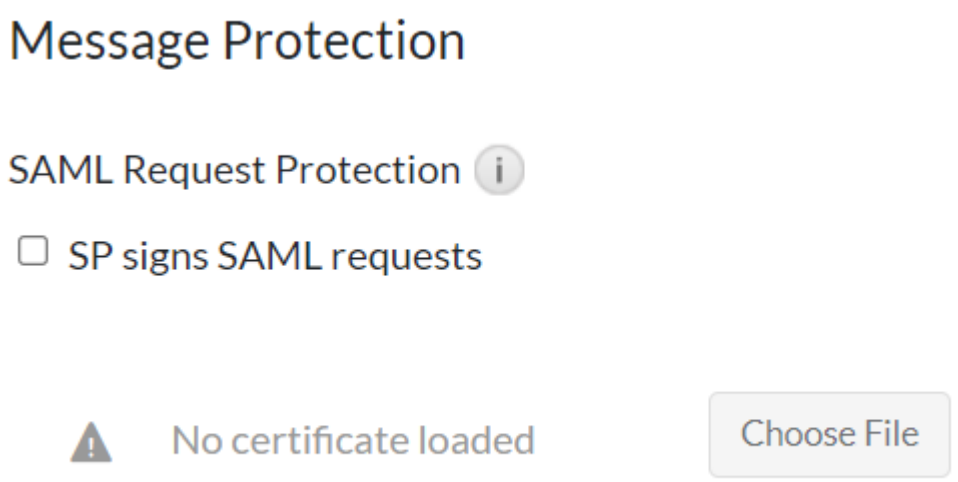
SP Parameters – NameID

- Another critical component of a SAML workflow
- Uniquely identifies the user accessing the SP
- Formats:
  - Auto Detect
  - urn:oasis:names:tc:SAML:2.0:nameid-format:entity
  - urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress
  - urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName
  - urn:oasis:names:tc:SAML:2.0:nameid-format:transient
  - urn:oasis:names:tc:SAML:2.0:nameid-format:persistent
  - urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified

SP Parameters – Signing Certificate (Optional)

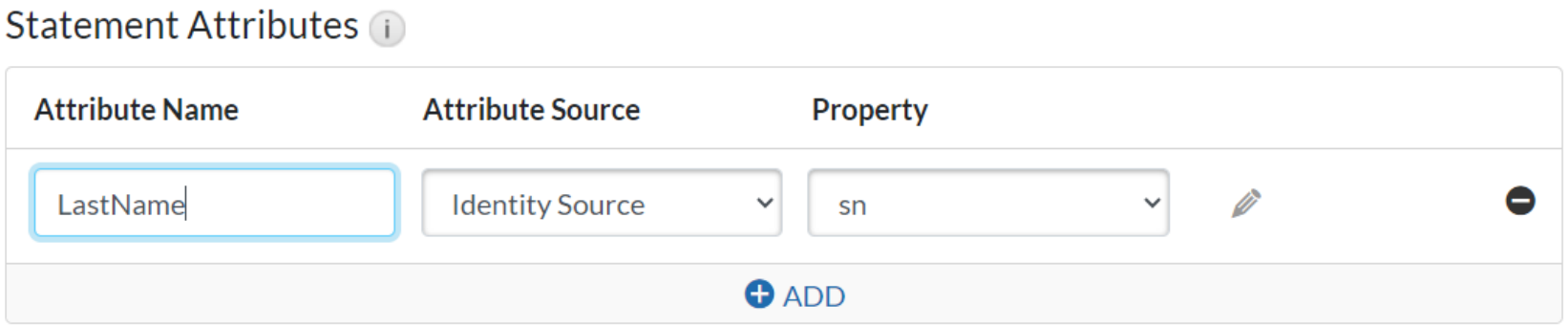
- Some SPs require to have the requests signed (WantAuthnRequestsSigned=true)

- For a proper flow and the Assertion to be issued, the SP Signing Certificate must be present in the IdP configuration



SP Parameters – Attribute Statements (Optional)

- Some SPs require additional Attributes bound to users authenticating beyond their NameID



- The Attribute can be constant or fetched from the configured Identity Source

SAML

IDP Parameters

IdP Parameters – Entity ID

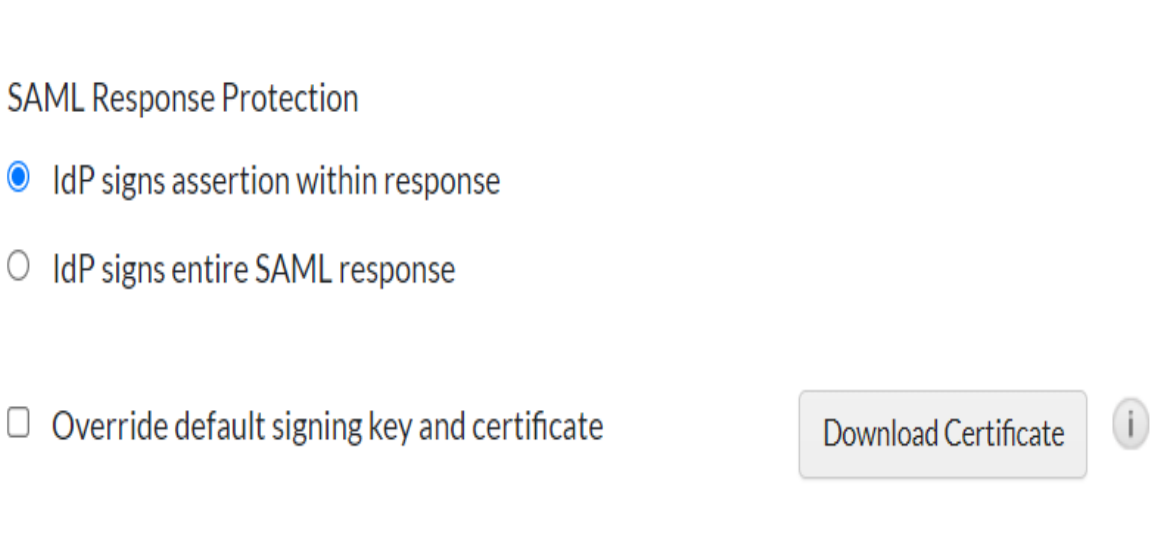
- Globally unique identifier used to identify the SP participating in the SAML authentication and authorization protocol
- Can be referred to as **Audience**, or **IdP Identifier**
- Can be a URL or a string

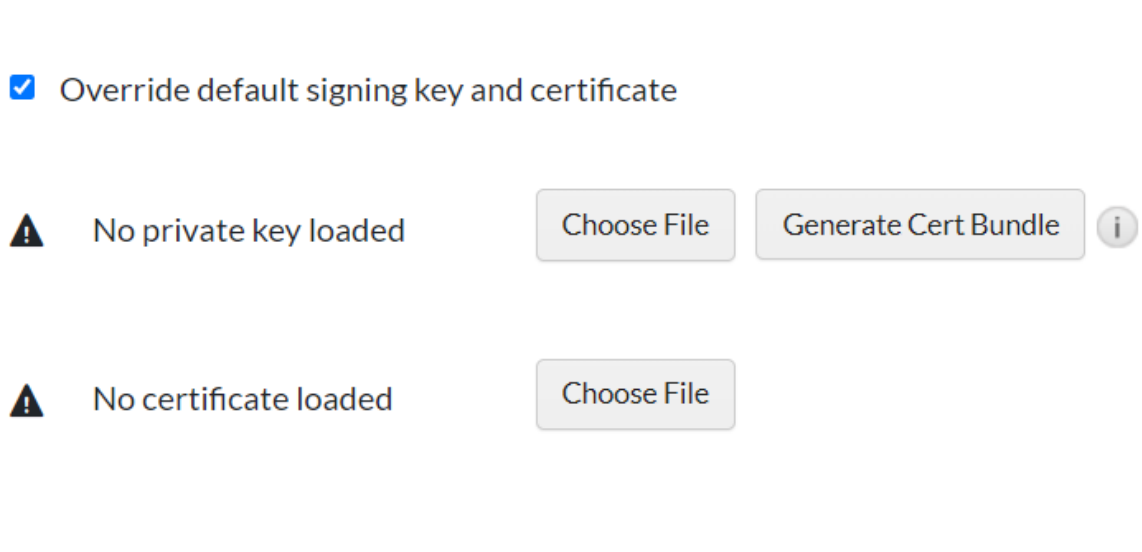
IdP Parameters – Service URL

- Uniquely identifies the IdP Endpoint the SP will send the request to
- Can be referred to as **Identity Provider URL**
- Typically ends in **/sso/saml/***

IdP Parameters – Signing Certificate (Optional)

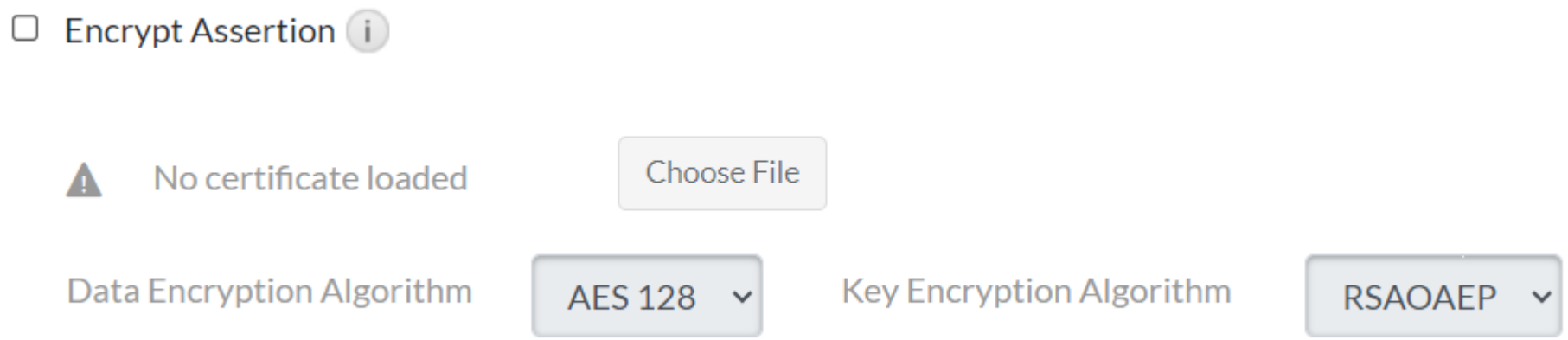
- It’s mandatory to have the IdP sign outgoing Assertions or the whole response
- For the SP to validate the signature, the Signing Certificate must be present in the SP configuration





IdP Parameters – Encryption Certificate (Optional)

- Some SPs require the IdP to encrypt the outgoing Assertions (WantAssertionEncrypted=true)
- The SP Encryption Certificate needs to be present in the IdP configuration



RSA

Q&A

Thank you