MidPoint Integrations: Partner Series

Authenticating into midPoint with SSO

Agenda

- Unicon - who we are and what we do
- Single Sign-On Introduction
- SAML2 introduction
- MidPoint Flexible Authentication
- Implementation of SSO for midPoint
- Emergency Login to midPoint
- Example configurations and resources

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Unicon - Who we are and what we do

- Professional Services company with over 30 years working with educational technology.
- Gold Partner with Evolveum.
- Numerous engagements in implementing and supporting midPoint installations for a variety of educational institutions.

We improve the experience of learning through the use of technology because education lifts all.

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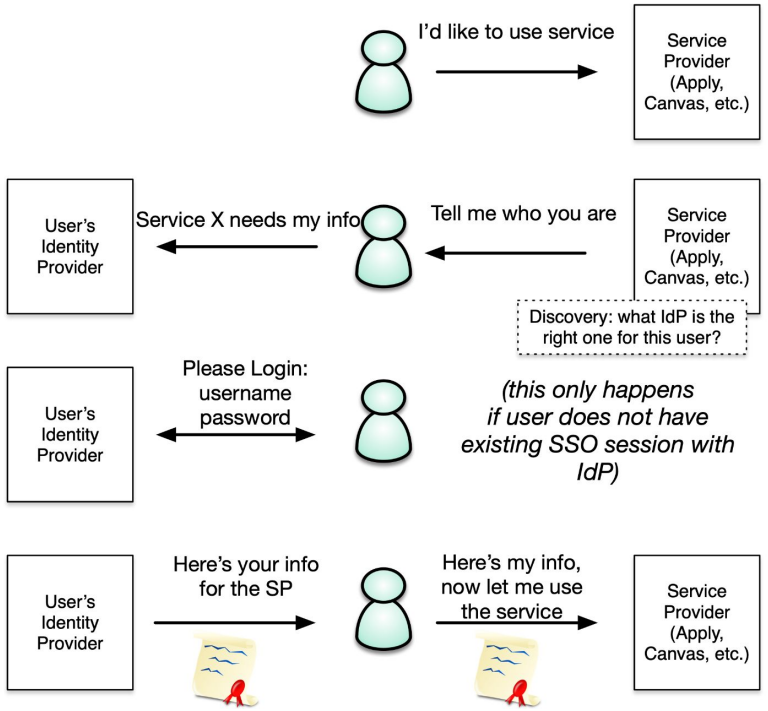
Introduction to SSO

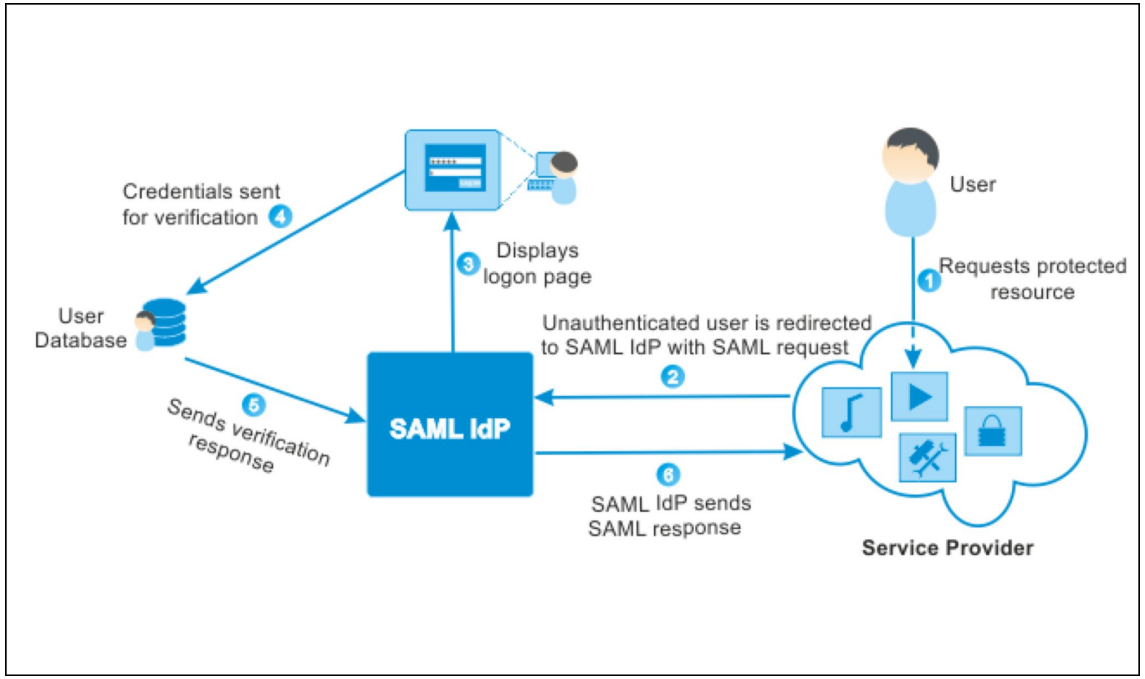
"Login once, access everything"

- Single Sign-On (SSO) is an authentication process that allows users to access multiple applications or systems with one set of login credentials.
- A user logs in to an identity provider (IdP).
- The IdP authenticates the user and issues a token or session.
- The user accesses multiple applications (service providers) that trust the IdP.
- Applications validate the token without requiring additional logins.
- SSO Common Protocols - SAML, OAuth 2.0, OIDC
- Simplifies Identity Management
- Enhances security posture
- Ensures compliance with industry standards



SAML2 Introduction

- Security Assertion Markup Language (SAML) 2.0 is an XML-based open standard used to securely exchange authentication and authorization data between parties.
- Enables Single Sign-On (SSO) by transferring identity information between an Identity Provider (IdP) and a Service Provider (SP).
- SAML Assertion - token containing authentication, attributes, and authorization information.
- Provides strong encryption and digital signatures for data integrity.
- Works across multiple platforms and applications.
- Common use cases include Enterprise SSO and Identity Federation.



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midPoint Flexible Authentication

Allows for midPoint authentication to be configured in a variety of ways

- midPoint is designed to handle **client-side** authentication use cases.
- midPoint is not an IdP, nor an authentication server and makes use of authentication modules that can be combined into sequences to fit the desired outcome.
- Traditional password based authentication using a directory server or the midPoint identity repository.
- midPoint can be a service provider (client) of an access management system that is using standard SSO protocols.
- midPoint can use SAML as the primary GUI authentication mechanism, and have an emergency login option for an administrator using password based authentication.

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Implementation of SSO in midPoint

XML is fun!

- Demo SSO Login
- Brief overview of SAML2 XML via SAML2 Tracer
- System configuration
  - Setting global security policy
  - Setting public url
- Security policy SSO overview and explanation of saml2 module
- Building a SAML2 Service Provider (SP) module for midPoint Flexible Authentication
  - Key generation
  - IdP Metadata
  - SP Metadata generation by midPoint
    - http://MIDPOINT_URL/midpoint/auth/default/SAML2_MODULE_ID/metadata/SERVICE_PROVIDER_ALIAS
    - For container deployments http may not be available, exec into the container and use the following midPoint location and port:
      - http://0.0.0.0:8080/midpoint/auth/default/SAML2_MODULE_IDENTIFIER/metadata/SERVICE_PROVIDER_ALIAS
  - SP Metadata manual creation
  - Combining and configuring midPoint security policy

Implementation of SSO in midPoint Continued

Always have a secure backup plan to avoid being locked out

- Demo Emergency Login
- Discussion of methods to restore security policy
- System configuration logging for troubleshooting
  - com.evolveum.midpoint.authentication
  - org.springframework.security.saml2
  - org.springframework.security.oauth2
- HTTP Header Token
  - Can be used by to proxy SSO to midPoint with a non-supported protocol or convenience in certain deployments

Generic SAML2 SSO Service Provider Metadata

```
<?xml version="1.0" encoding="UTF-8"?>
<md:EntityDescriptor entityID="***ENTIY_ID***" xmlns:md="urn:oasis:names:tc:SAML:2.0:metadata" >
   <md:SPSSODescriptor protocolSupportEnumeration ="urn:oasis:names:tc:SAML:2.0:protocol" >
       <md:KeyDescriptor use="signing">
           <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#" >
               <ds:X509Data>
                   <ds:X509Certificate>***SIGNING_KEY***</ds:X509Certificate>
               </ds:X509Data>
           </ds:KeyInfo>
       </md:KeyDescriptor>
       <md:KeyDescriptor use="encryption">
           <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#" >
               <ds:X509Data>
                   <ds:X509Certificate>***ENCRYPTION_KEY***</ds:X509Certificate>
               </ds:X509Data>
           </ds:KeyInfo>
       </md:KeyDescriptor>
       <md:AssertionConsumerService
               Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
               Location="***ACS_URL***" index="1"/>
   </md:SPSSODescriptor>
</md:EntityDescriptor>
```

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Example SAML2 Flexible Authentication Module Configuration

```
<saml2>
   <identifier>saml2sso</identifier>
   <description>My internal enterprise SAML-based SSO system. </description>
   <serviceProvider>
       <entityId>https://mymidpoint.local </entityId>
       <alias>idmsp</alias>
       <signRequests> false</signRequests>
       <keys>
           <activeSimpleKey>
               <privateKey>
                   <t:clearValue>-----BEGIN PRIVATE KEY-----KEY_HERE-----END PRIVATE KEY----- </t:clearValue>
               </privateKey>
               <passphrase>
                   <t:clearValue>password_here</t:clearValue>
               </passphrase>
               <!-- Public key must be UTF-8 base64 encoded including begin and end certificate portions -->
               <certificate>
                   <t:clearValue>base_64_encoded_public_key_here </t:clearValue>
               </certificate>
           </activeSimpleKey>
       </keys>
       <identityProvider>
           <entityId>https://sso.example.com </entityId>
           <metadata>
               <pathToFile>/opt/midpoint/var/metadata/idp-metadata.xml </pathToFile>
           </metadata>
           <linkText> My SAML2 SSO</linkText>
           <authenticationRequestBinding> urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST </authenticationRequestBinding>
            <!-- Maps attribute sent by SSO server in the SAML2 response/assertion XML to the midPoint User name attribute!
-->
           <nameOfUsernameAttribute> uid</nameOfUsernameAttribute>
       </identityProvider>
   </serviceProvider>
</saml2>
```

Example OIDC Flexible Authentication Module Configuration

```
<oidc>
   <identifier>oidcsso</identifier>
   <client>
       <registrationId>mymidpoint</registrationId>
       <clientId>mymidpoint</clientId>
       <clientSecret>
           <clearValue>client_secret</clearValue> <!-- Create a sufficiently good secret following OIDC/OAuth guidelines -->
       </clientSecret>
       <clientAuthenticationMethod> privateKeyJwt</clientAuthenticationMethod >
       <nameOfUsernameAttribute> sub</nameOfUsernameAttribute>
       <openIdProvider>
           <issuerUri>https://sso.example.com </issuerUri>
           <!-- If the OIDC well known endpoint doesn't work, the following are required! -->
           <!-- Note: These follow the Shibboleth IdP OIDC locations, you will need to change for other OIDC Claim Providers -->
           <authorizationUri>https://sso.example.com/idp/profile/oidc/authorize </authorizationUri>
           <tokenUri>https://sso.example.com/idp/profile/oidc/token </tokenUri>
           <userInfoUri>https://sso.example.com/idp/profile/oidc/userinfo </userInfoUri>
           <jwkSetUri>https://sso.example.com/idp/profile/oidc/keyset </jwkSetUri>
       </openIdProvider>
       <!-- The key and keystore must be created beforehand and exist otherwise module will not load!!! -->
       <keyStoreProofKey>
           <keyStorePath>/opt/midpoint/var/oidcssokeystore.jks </keyStorePath>
           <keyStorePassword>
               <clearValue>password</clearValue>
           </keyStorePassword>
           <keyAlias>midpoint</keyAlias>
           <keyPassword>
               <clearValue>password</clearValue>
           </keyPassword>
       </keyStoreProofKey>
   </client>
</oidc>
```

Example Administrator GUI Emergency Login Sequence

```
<sequence>
   <!-- Admin GUI Emergency Login URL: https://your_midpoint_url/midpoint/auth/emergency
         Note this will not work if you break config in *any* of the security policy modules!
          Use REST API/midPoint Studio or Ninja to upload a working security policy XML object in that case.
           If those don't work, use the database! -->
   <identifier>admin-gui-emergency</identifier>
   <description>Allows only users with role Superuser to Login via https://your_midpoint_url/midpoint/auth/emergency URL.
        Useful if SSO is broken. Uses default login form, passwords for the admin(s) must be set in midPoint.  </description>
   <channel>
       <channelId>http://midpoint.evolveum.com/xml/ns/public/common/channels-3#user </channelId>
       <default>false</default>
       <urlSuffix>emergency</urlSuffix>
   </channel>
   <requireAssignmentTarget oid="00000000-0000-0000-0000-000000000004" relation="org:default" type="c:RoleType">
       <!-- Superuser -->
   </requireAssignmentTarget>
   <module>
       <identifier>internalLoginForm</identifier>
       <order>30</order>
       <necessity>sufficient</necessity>
   </module>
</sequence>
```

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Links and Documentation

- Flexible Authentication Basic Concepts
- Flexible Authentication Configuration
- Evolveum Samples: Security Policy with SAML2 SSO
- SAML2 Key and Key Generation Guide

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Thank you for your attention

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